



**INDIAN AGRICULTURAL
RESEARCH INSTITUTE, NEW DELHI**

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INTERNATIONAL REVIEW OF AGRICULTURE

PUBLISHED

BY THE

INTERNATIONAL INSTITUTE OF AGRICULTURE



XXIXth Year — No. 7 — July, 1938

ROME
VILLA UMBERTO I
1938

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INTERNATIONAL REVIEW OF AGRICULTURE

PUBLISHED
BY THE
INTERNATIONAL INSTITUTE OF AGRICULTURE



XXIXth Year — No. 8 — August, 1938

ROME
VILLA UMBERTO I
1938

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INTERNATIONAL REVIEW OF AGRICULTURE

PUBLISHED
BY THE
INTERNATIONAL INSTITUTE OF AGRICULTURE



XXIXth Year — No. 9 — September, 1938

ROME
VILLA UMBERTO I
1938

The reproduction either in whole or in part of material printed in the Review is permitted, but only on the express condition that the source is duly acknowledged as follows: *International Review of Agriculture (International Institute of Agriculture)*.

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INTERNATIONAL REVIEW OF AGRICULTURE

PUBLISHED
BY THE
INTERNATIONAL INSTITUTE OF AGRICULTURE



XXIXth Year — No. 10 — October, 1938

ROME
VILLA UMBERTO I
1938

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INTERNATIONAL REVIEW OF AGRICULTURE

PUBLISHED

BY THE

INTERNATIONAL INSTITUTE OF AGRICULTURE



XXIXth Year — No. 11 — November, 1938

ROME

VILLA UMBERTO I

1938

The reproduction either in whole or in part of material printed in the Review is permitted, but only on the express condition that the source is duly acknowledged as follows: *International Review of Agriculture (International Institute of Agriculture)*.

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INTERNATIONAL REVIEW OF AGRICULTURE

PUBLISHED
BY THE
INTERNATIONAL INSTITUTE OF AGRICULTURE



XXIXth Year — No. 12 — December, 1938

ROME
VILLA UMBERTO I
1938

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AGRICULTURAL ECONOMICS AND SOCIOLOGY

MONTHLY BULLETIN OF AGRICULTURAL ECONOMICS AND SOCIOLOGY

STUDIES ON THE INTERNATIONAL MARKET FOR AGRICULTURAL PRODUCTS

I. — Costs and Prices: the Evolution of the Market for Commercial Fertilisers.

An attempt, such as is contemplated in this article, to embark upon the comprehensive subject of arable cultivation and to deal with the economic aspect of the utilisation for crops of commercial fertilisers, must necessarily encounter very considerable limitations. On the one hand it is obviously impossible to treat so vast a subject in full detail on an international basis, more especially if, as is proposed, interaction of costs and prices is taken as the essential factor of the economic processes. On the other hand, statistical information comparable from the international standpoint is available only to a limited extent, and accordingly the range of this attempt is still further restricted.

A special study has been made of the development of the world market in nitrogenous substances, that is, since its beginnings up to 1932, in all some 100 years or more, with a view to collecting all material relevant to our subject. Moreover the course of this development and the elucidation of the great changes that have taken place in this market come within the scope of this article and merit the most careful attention. The facts are known; it will be the endeavour of the writer to establish the causes of these remarkable changes. The investigation has been in part suggested by the work by Walter Eucken entitled *Die Stickstoffversorgung der Welt* which appeared in 1921. In this the author briefly outlines the influence exercised up to the war time by cotton prices in the United States and beet sugar prices in Europe, and especially in Germany, on the price formation of Chile Saltpetre, an important nitrogenous manure. He draws the attention of the reader to the initial competition between Chile saltpetre, or sodium nitrate, and ammonium sulphate, and indicates as the successful rivals of sodium nitrate, which formerly governed the nitrogen market, the synthetic nitrates, particularly the Leuna-saltpetre.

It is for this reason that in the respective sections of this article an endeavour has been made to investigate the relations existing between the prices of sodium nitrate and its rivals on the one hand, and on the other certain important products such as North American cotton and European, especially German, beet sugar. It has proved possible to establish the noticeable influence exercised on the prices of the means of production and on their quantitative con-

sumption, by the prices of the products or by the extent of their production. In these sections it has been possible to illustrate by the statistics the causes of the generally known revolutions that have occurred on the world nitrate market.

In view of space considerations, no account has been given of the undoubtedly very interesting phenomena of competition between the various phosphatic manures. This omission is of less importance, since the principal representatives of this class of fertilisers, namely, basic slag which is very slowly soluble and superphosphate which is rapidly soluble, are often complementary in their application. During the first ten years after the appearance of superphosphate there does seem however to have been a certain competition.

On the market of potassic fertilisers changes of the kind indicated have not occurred, although the manufacture of new potassic compounds and the suppression at the close of the war of the German monopoly did to a certain extent affect this market.

The same considerations will also prevent discussion of the vegetable and animal nitrogenous manures, as for example came into use in Japan before the war. In that country there was a large direct utilisation as fertiliser of the oil-seeds of soya, cotton and colza. The same procedure was adopted also in the United States of America, where in particular cottonseed meal was used for direct fertilising purposes, as well as meat meal, fish meal, dried blood and concentrated meat meal. Especially in the United States however even before the war, owing to the high prices of these nitrogen carriers, their use as fertilisers tended to be replaced increasingly by utilisation as concentrated feeding stuffs. In some of the cotton growing States cottonseed is none the less even at the present day employed as a fertiliser.

In establishing international comparisons of the exchange values of the products of arable farming, the discussion is confined to the most important breadstuff cereal, wheat, and to oats, while in respect to the fertilisers, in consequence of the absence of statistics in certain countries, the field is somewhat narrowed. These restrictions are to be regretted but are unavoidable. At the same time the material available does permit of valuable surveys and comparisons.

Neglecting the usual unilateral method of considering prices, and attacking instead the interaction of costs and prices, it is possible to reach conclusions which could not otherwise be drawn and some new insight may thus be gained into the economic conditions which govern this sphere.

I.

Although it is essential to treat the material with the utmost thoroughness, so as to trace out from the respective series of figures the facts and their connections, we are obliged to be content, in view of the admitted absence of statistical data of the more remote period, with data for those times that will be regarded from the modern standpoint as somewhat primitive in type. It is however quite

practicable even from these data to fill out the picture of the whole course of the development.

Thus for any general view of the period from 1830 to 1912, production statistics relating to products and means of production are all that can be obtained. As shown in Table I these items are sufficient to establish that the production of sodium nitrate, as the principal nitrogenous fertiliser of the pre-war times, and the production of cotton in the United States of America as well as the production of beet sugar in the world show during this long period a similar rising tendency.

TABLE I.

Average of the years	1 Nitrate of soda production in million kgs.	2 Cotton production of United States in 1000 bales (500 lb.)	3 Beet sugar production of the world in 1000 tons	4 Wheat production of Europe incl. Russia million tons
1830-34	16	849	—	—
1860-64	321	2,135	(1) 527	—
1890-94	985	8,324	(2) 3,920	38.37
1896-1900	1,288	10,105	4,980	40.86
1901-03	1,373	10,183	5,843	48.03
1904-06	1,660	12,576	6,096	35.37
1907-09	1,973	11,715	6,323	34.97
1910-12	2,516	14,055	7,523	39.53

(1) 1864-65. — (2) 1891-95.

As will be seen the average of the years 1830-34 shows a production of sodium nitrate of 16,000,000 kg. and a production, in the United States of America, of 849,000 bales (of 500 lb.) of cotton. In 1890-94, or sixty years later, the average production of sodium nitrate was 985,000,000 kg. and that of cotton in the United States was 8,324,000 bales (of 500 lb.); from 1901 to 1903, production of sodium nitrate reached an average of 1,373,000,000 kg. and that of cotton in the U. S. A. 10,183,000 bales; finally from 1910 to 1912, the average production of sodium nitrate rose to 2,516,000,000 kg. and that of cotton in the U. S. A. to 14,055,000 bales.

The course of the world production of beet sugar is similar. As compared with the output of sodium nitrate of 985,000,000 kg. for the average of the years 1890-94, the average world production in years 1891-95 of beet sugar was 3,920,000 m. tons; for 1904-06 to an average output of sodium nitrate of 1,660,000,000 kg. there corresponds a world beet sugar production of 6,096,000 m. tons, and for the average of the years 1910-12 to a production of sodium nitrate of 2,516,000,000 kg. there corresponds one of world beet sugar of 7,523,000 tons.

In contrast to this parallel development of the production of sodium nitrate on the one hand, and of that of cotton in the United States and of the world pro-

cuction of beet sugar on the other, the production of wheat in Europe, including Russia, showed a tendency to decline. From the quinquennial average of 1890-94 to that of 1901-03, the curve, alike for wheat production and for that of sodium nitrate, is an ascending one, but for the average 1904-06 that for wheat had already dropped, while that for the production of sodium nitrate was still rising, and the same was the case in the years 1907-09. The wheat production curve again showed a rise in 1910-12, but a slight one only, reaching the position of 1890-94, while the sodium nitrate average output for 1910-12 was almost $2\frac{1}{2}$ times as large as the average of 1890-94.

Although it must of course be realised that the comparison here instituted of the production data does not provide a complete proof of an actual interdependence of the two crop products, cotton and beet sugar, on the one hand, and sodium nitrate production on the other, it may none the less be admitted, in virtue of data still to be adduced which may render possible more precise conclusions, the establishment of such a dependence will be shown to be probable. The same holds good in respect of the divergent tendency shown by the production data of wheat and sodium nitrate.

II.

For the next twenty-year period, from 1913-32, it is possible to obtain precise data. In Table II the successive items are shown in comparison and the three-year moving averages are calculated.

Before giving the table we give a fuller statement of the contents of the columns than can be given in the headings.

Column 1. — Aggregate area of sugar beet cultivation in the 14 main producing countries of the world; for the period 1909 to 1913 this area represented 98.30 per cent. and in 1932, 92.63 per cent. of the whole area under sugar beet cultivation in the world, apart from Russia. The following are the sugar beet growing countries included: Germany, Austria, Belgium, Denmark, Spain, France, Great Britain, Hungary, Italy, Netherlands, Poland, Sweden, Czechoslovakia, and the United States of America. Russia had to be left out of count, owing to the absence of data relating to the consumption of artificial manures.

Column 2. — Area under cotton in the United States of America.

Column 3. — Utilisation of artificial manures, apart from raw phosphates, in the 14 countries enumerated.

Column 4. — Aggregate area under wheat cultivation in 13 of the countries as above, omitting the United States. This latter country is not taken into consideration, because the area under wheat is nearly as large as that of the other 13 countries taken together, and because the normal fluctuations in American conditions would have so greatly modified the general survey that erroneous conclusions might easily have been drawn as to the development of production. In fact the uniform increase shown in column 4 of the wheat area of the 13 European countries — very remarkable as between the periods 1917

TABLE II.

	1	2	3	4	5	6	7	8	9	10	11
Moving 3 year	Areas under sugar beet cultivation (14 countries) in 1000 ha.	Areas under cotton in the U. S. A. in 1000 ha.	Consumption of commercial fertilisers (excl. raw phosphate) (14 countries) million quintals	Areas under wheat in 13 countries in 1000 ha.	Areas under wheat in the United States of America in 1000 ha.	Consumption of commercial fertilisers (excl. raw phosphate) in U. S. A. million quintals	Nitrogenous fertiliser consumption of U. S. A. million quintals	Consumption of commercial fertilisers (excl. raw phosphate) in Germany million quintals	Nitrogenous fertiliser consumption in Germany million quintals	Areas under sugar beet cultivation in Germany in 1000 ha.	Areas under wheat in Germany in 1000 ha.
Averages											
1913-15	1,490.10	14,209	154.30	22,330	22,149	47.83	9.59	40.97	8.16	481.33	1,991
1914-16	1,310.23	13,925	134.68	20,491	22,437	49.44	11.54	35.23	6.33	437.17	1,864
1915-17	1,166.27	13,522	135.81	18,464	21,297	55.28	14.85	37.61	7.43	383.13	1,734
1916-18	1,131.13	14,142	113.98	16,719	21,123	67.11	18.63	36.93	8.91	383.80	1,570
1917-19	1,131.47	13,950	135.82	16,528	24,277	59.66	16.35	30.78	8.21	350.97	1,442
1918-20	1,229.67	14,225	152.66	17,496	26,442	65.84	16.16	26.54	7.77	331.33	1,395
1919-21	1,364.80	13,667	154.00	18,544	27,051	56.26	10.81	26.96	8.07	339.00	1,372
1920-22	1,445.90	13,535	170.90	19,627	25,247	50.32	11.02	35.19	11.06	377.47	1,397
1921-23	1,511.59	13,793	158.51	20,954	25,045	44.18	9.35	35.04	12.61	396.73	1,431
1922-24	1,602.15	15,043	171.94	20,117	23,539	45.30	12.30	36.20	12.82	368.37	1,439
1923-25	1,835.37	16,709	188.36	20,387	22,182	48.35	15.10	37.94	12.75	393.63	1,499
1924-26	1,896.93	18,144	204.33	20,634	21,735	45.34	15.65	46.70	14.71	400.10	1,540
1925-27	1,887.60	17,979	213.29	21,142	22,578	40.96	15.31	52.77	16.65	413.33	1,634
1926-28	1,941.53	17,883	218.05	21,306	23,390	34.36	15.45	56.79	18.84	430.47	1,693
1927-29	2,027.57	17,364	229.15	21,345	24,332	33.50	16.31	60.33	19.78	447.97	1,602
1928-30	2,061.90	17,677	228.47	21,476	24,855	31.94	16.12	61.24	19.91	464.27	1,703
1929-31	1,998.10	16,782	210.52	21,812	24,697	28.47	13.84	57.67	18.61	439.77	1,849
1930-32	1,859.97	15,796	182.08	22,353	23,872	22.16	10.30	53.73	17.71	378.23	2,076

* Ec. r. Engl.

1919 and 1930-32, the increase being from about 16,500,000 ha. to 22,400,000 ha. over those years — would be completely masked by the great fluctuations in the wheat areas of the United States. The area under wheat in the States, for example, between the period 1916-18 to 1919-21 increased from 21,123,000 ha. to 27,051,000 ha. and then declined till in 1924-26 it stood at 21,735,000 ha. The fluctuations of the last few years would equally affect the general survey.

Column 5. — Area under wheat in the United States of America.

Column 6. — Consumption of commercial fertilisers, apart from raw phosphates, in the United States.

Column 7. — Consumption of nitrogenous fertilisers in the United States.

Column 8. — Consumption of commercial fertilisers, apart from raw phosphates, in Germany.

Column 9. — Consumption of nitrogenous fertilisers in Germany.

Column 10. — Area under sugar beet cultivation in Germany.

Column 11. — Area under wheat in Germany.

There may now be compared the variations in the sugar beet areas of the 14 countries (Column 1), in the areas under cotton in the United States (Col. 2) and in the utilisation of commercial fertilisers in the 14 countries (Col. 3), for the twenty years 1913-15 to 1930-32.

In the first place the period 1916-18 is to be noted as a turning point, the area under sugar beet in the 14 countries declining from 1,499,100 ha. in 1913-1915 to 1,131,130 ha. for 1916-18, and increasing again subsequently. A similar movement may be noted in the utilisation of commercial fertilisers in these countries. This consumption in 1913-15 amounted to 154,300,000 quintals and in 1916-18 to 143,980,000 quintals and thus also showed a decline, although, as is seen from the Table, the average was somewhat higher for 1916-18 than it was either for 1914-16, 1915-17 or for 1917-19. These variations seem to have been due to the American cotton growing, which, as Column 2 shows, decreased from 1913-15 to 1915-17, in 1916-18 again almost reached the extent of 1913-15, only again somewhat to diminish for 1917-19. It may also be noted that the consumption of commercial fertilisers (Column 3) from 1917-19 to 1928-1930 shows a fairly uniform tendency to increase interrupted only in the period 1921-23. The decline, however, in 1921-23 is not to be attributed, as is clear from Column 1, to any diminution of the area under sugar beet, nor (Column 2) to any reduction in the cotton area in the United States. On the other hand it was occasioned, as may be seen from the figures of the consumption of commercial fertilisers in the United States, by a marked shrinkage of this consumption in that country. In fact, while in the 14 countries taken together for the period 1920-22 to 1921-23 the reduction in consumption amounted to 12,000,000 quintals, that in the United States alone amounted to nearly 15,000,000 quintals. In this case there must be details involved which escape investigation.

here at least, for as appears from the subsequent Table V (Columns 1-5) the fact is not to be attributed to any large price changes.

In 1928-30 a particularly striking change took place. As average for those years there was in the 14 countries taken together an area of sugar beet cultivation of 2,061,900 ha., representing a maximum, and a consumption of commercial fertilisers of 228,470,000 quintals (Column 3), another maximum, and furthermore in the United States a maximum area under cotton of 17,677,000 ha. From 1928-30 to 1930-32 the average area under sugar beet in the 14 countries concerned decreased from 2,061,900 ha. to 1,859,970 ha. the area under cotton in the States from 17,677,000 ha. to 15,796,000 ha. and the utilisation of commercial manures in the 14 countries from 228,470,000 quintals to 182,080,000 quintals.

The relation appears also to be very clear between cotton growing and fertiliser consumption in the United States alone. In this country, the area under cotton (Column 2) decreased as between 1928-30 to 1930-32, as already stated, from an average of 17,677,000 ha. to 15,796,000 ha., the commercial fertiliser consumption (Column 6) from 31,940,000 quintals to 22,160,000 quintals and the consumption of nitrogenous fertiliser as such (Column 7) from 16,120,000 quintals, to 10,300,000 quintals.

Still more clear are the relations in Germany between sugar beet growing and the consumption of commercial fertilisers in the twenty year period between the average of 1913-15 and that of 1930-32 (Columns 8, 9, and 10). During this period the smallest area under sugar beet in Germany was the average for 1918-20 with 331,330 ha. (Column 10) and for the same period the average consumption of commercial fertilisers was also lowest, 26,540,000 quintals, as well as that of nitrogenous manures with 7,770,000 quintals. For the critical years 1928-30 the maxima were reached of 464,270 ha. for sugar beet cultivation, 61,240,000 quintals of commercial fertilisers and 19,910,000 quintals of nitrogenous manures. The averages for 1930-32 fall sharply to 378,230 ha. for area under sugar beet, to 53,730,000 quintals for commercial fertilisers and to 17,710,000 quintals for nitrogenous manures.

It is quite otherwise with the area under wheat cultivation (Columns 4, 5 and 11). This area in aggregate for the 13 countries under review diminished as between 1913-15 and 1917-19 from an average of about 22,000,000 to about 16,500,000 ha., then without interruption increased again to about 22,000,000 ha. as an average for 1930-32. The wheat area in Germany followed a similar course (Column 11), on the other hand the wheat area of the United States of America, as already observed, shows considerable fluctuations, so that no such close connection can be noted with the fertiliser consumption as is the case with cotton and sugar beet.

In conclusion it may be said that a close connection is observable in the countries under review between cotton and sugar beet growing on the one hand and consumption of commercial fertilisers on the other, while such a connection between wheat growing and fertiliser consumption cannot be said to have been proved to exist.

Some few remarks may be added to what has been stated in Sections I and II.

Assuming that the production figures of commercial fertilisers for the years previous to 1913 represent the actual consumption of these fertilisers — and although taking each year separately this may involve error, the assumption is justified for a period of years — it will be seen that up to 1932 in the principal, that is, the representative countries a close connection exists between the consumption of commercial fertilisers and the extent of the areas under cotton or sugar beet cultivation respectively. On the other hand the wheat production or extent of the wheat areas of the European lands under consideration here appears to have no relation to the consumption of fertilisers.

This independence of European wheat production in respect of fertiliser consumption, however, dates only from the beginning of the century or in any case is observable only from that point of time. The reason for this is not far to seek.

The diminution in European wheat production or in the extent of the wheat areas finds a simple explanation in the fact that the overseas producing countries outstripped the European wheat growers, placed cheaper wheat on the market, and forced back the European cultivation on to the more high yielding lands, thus involving a reduction in area.

In addition, the beginning of the century coincided with a complete change in the conception of plant nutrition. Up to that time the Liebig theories on the subject mainly prevailed, and accordingly the dominant practice was that of the use of chemical fertilisers, but on the other hand the use of physical methods of plant nutrition began to gain ground; that is to say, that apart from the traditional application of farm manure, increased attention was given to circulation of water in the soil, soil structure — the ideal structure being a crumbly soil — and soil aeration. It was recognised at the same time that for the crop rotation it was essential to introduce crops which required highly intensive and careful cultivation of the soil, as for example the sugar beet. These crops too, the roots of which deeply penetrate the soil, while their leaves effectively shade the soil surface, leave the ground in the most favourable condition for the next crop in rotation.

Apart from the sugar beet, the leguminous plants were well known from experience to have an excellent effect in soil rotation, and the practice of using them for green manuring began. The object of green manuring, whether or not with leguminous plants, was, thirty years ago, primarily to apply physical methods of soil improvement. Thus it is seen that from the beginning of the century onwards the problem of manuring took a chemical and physical direction; it belongs, as it were, to the borderland of the two branches of science, a typical phenomenon in the development of theoretical and practical knowledge of a sphere of economy.

The decisive phase, however, in the problem of crop manuring was reached only towards the end of the first decade of this century, when the great discoveries of soil bacteriology were made. As soon as it was proved that all life in the soil and all plant growth depends on the activity of soil bacteria, which exercise their influence in many and various ways, from that time the

predominance of the chemico-physical theory of plant nutrition, and consequently of manuring, came to an end, and the present stage was entered upon, that of the chemico-physico-bacteriological conception. The serial arrangement of this term connotes merely the historical development and has no reference to the degree of importance of the elements. Soil bacteriology, or in any case its practical application, dates from about 1910, but it was not till nearly half a generation later that advantages began to be derived from the more widely diffused practical application of the knowledge of soil bacteria. Although no proof can be adduced, the question may be asked whether the steady increase in the wheat areas since the period 1917-19 in the countries under review — an increase which has been seen to have no relation to consumption of fertilisers, and which moreover continued from 1930 in spite of the rapid decline in fertiliser consumption — is not to be attributed to the knowledge acquired of the chemico-physico-bacteriological methods of nutrition, and thereby as it were reflects the modern methods of cultivation. Proof cannot be readily obtained; but the supposition appears very probable.

III.

Apart from the relations existing between the quantities of commercial nitrogenous fertilisers on the one hand and those of raw sugar and cotton on the other there also exists a far reaching interdependence as to prices.

So long as we are concerned with production costs, it may be asked whether the increasing production of nitrogenous fertilisers has been a consequence of the increasing demand, or whether the increasing demand has resulted from the fresh possibilities of production brought about by the increased output of nitrogenous fertilisers; when however it is a question of prices it is clear that the prices of products have influenced the prices of the means of production.

For the period from 1851-55 to 1906-10, Table III shows a very similar development of cotton prices in America (column 3) and of raw sugar in Magdeburg (column 2) on the one hand, and on the other of nitrate of soda (according to information coming from Hamburg) (column 1). Up to 1906-10 nitrate of soda was the most important nitrogenous fertiliser in the world.

The price of nitrate of soda at Hamburg declined from the high average price of 23.54 marks per 50 kg. for the years 1851-55 to 7.51 marks per 50 kg. as the average of the years 1896-1900. Over the same period the prices of raw sugar fell from 45.34 marks for 100 kg. for 1851-55 to 21.26 marks (Magdeburg quotations) per 100 kg. for 1896-1900, and in the same way the American cotton prices diminished from 10.44 cents per lb. for 1851-55 to 7.28 cents per lb. for 1896-1900. On the other hand it may be noted that the rise in the price of cotton from its lowest point in 1896-1900 with 7.28 cents per lb. to 11.30 cents per lb. as the average of the years 1906-1910 corresponds with a rise in prices of sodium nitrate from 7.51 marks per 50 kg. to 10.02 marks per 50 kg., while over the same period the price of raw sugar in Germany (Magdeburg quotations) slowly dropped, viz. from 21.26 marks to 19.98 marks

per 100 kg. The price of raw sugar in fact touched lowest level in 1901-1905 when this product was worth 18.94 marks the 100 kg.; in 1906-10 it went up to 19.98 as stated. This price thus really follows the same curve as that of sodium nitrate or cotton.

In the eighties a formidable competitor to sodium nitrate made its appearance, ammonium sulphate. If attention is given to the price movements of this nitrogenous fertiliser (column 8) it will be seen that they follow very closely those of the prices of raw sugar or cotton, as well as those of sodium nitrate.

It must be further noted that it is not the raw sugar price in general which exercises a decisive influence on the prices of nitrogenous fertiliser but that it is the price of the raw sugar of the leading European sugar-growing countries, and in the first instance, the prices ruling in Germany at Magdeburg (column 2) and in Austria at Aussig (column 7).

In Table III the fluctuations in the prices of raw sugar in Germany, Austria and United States (New York) are compared with the price movements of sodium nitrate. From this comparison it will be seen that the German and Austrian prices of raw sugar show the same variations as do the prices of sodium nitrate while the prices of American sugar are noticeably more independent. From 1896-1900 to 1906-10 one of the periods of rising price for sodium nitrate, the price of American sugar, on the other hand, declined, and the same contrary tendency may be noted over 20 years, *i. e.*, from 1891 to 1910. The price of French sugar has shown the same variations as that of German and Austrian and has done so over 15 years. It is not then the prices of raw sugar in general that have exercised an influence on the course of the prices of sodium nitrate, but in the first place the prices of German and Austrian sugar, perhaps also of French sugar, next to the price of American cotton.

In Table III the price of wheat in Germany is also shown in its course since 1861-65, so as to examine how far it has an influence on sodium nitrate prices. It is a striking fact that in these fifty years the course of the price movements of wheat and sodium nitrate has been similar. It may be admitted however that wheat prices in Germany have not had the same decisive influence as the raw sugar prices on prices of this fertiliser. It may be taken as certain, none the less, that wheat prices in Germany have had some influence, though how definite it is not easy to say, on prices of sodium nitrate, since over that period Germany was the largest consumer of sodium nitrate among the countries, and moreover the wheat areas in Germany undoubtedly received large applications of this fertiliser as good yields could only be so obtained. The predominant influence on the prices of sodium nitrate, however, over the period 1896-1900 to 1906-10 is that of American cotton prices.

The price of ammonium sulphate, which from 1881-85 to 1896-1900 had to follow the severe decline in sodium nitrate prices caused by the collapse of cotton and raw sugar prices, and which in 1895-99 touched its lowest pre-war level of 90 marks per 100 kg per cent, has no important influence on the German market of nitrogenous fertilisers. On the contrary in order to retain a market prices of this product had to follow those of sodium nitrate. At the present day the position is much the same; ammonium sulphate is simply a by-product of gas

TABLE III.

Average of the years	1 Germany nitrate of soda 50 kg./mark acc. to Hamburg State statistics	2 Germany Raw sugar 100 kg./mark Magdeburg quotation	3 U. S. A. Cotton average price in cents per lb. Census Bureau	4 Germany price of wheat 100 kg./mark Prussian price	5 U. S. A. sugar price New York 96 % centrifugal sugar cents per lb.	6 Prussia price for raw sugar 88 % Paris 18s. per 100 kg.	7 Austria raw sugar-first product Ausg. 100 kg./Kz.	8 Germany prices per kg. % nitrogen in ammonium sulphate Mark
1851-55	23.54	45.34	10.44	—	—	—	—	—
1856-60	17.55	59.11	12.36	—	—	—	—	—
1861-65	14.06	46.57	65.32	18.80	—	—	—	—
1866-70	15.17	48.30	25.30	22.00	—	—	—	—
1871-75	13.46	54.78	16.74	23.50	—	—	—	—
1876-80	13.91	52.46	11.42	21.10	—	—	(1) 71.33	—
1881-85	11.20	41.95	10.66	19.00	—	—	(2) 50.02	(3) 1.77
1886-90	9.05	—	10.28	17.40	—	—	(4) 38.68	(5) 1.14
1891-95	8.58	27.68	7.46	16.80	3.48	34.32	(6) 32.10	(7) 1.13
1896-1900	7.51	21.26	7.28	16.20	4.08	29.02	(8) 25.34	(9) 0.90
1901-1905	9.37	18.94	9.62	16.40	3.90	23.52	(10) 22.34	(11) 1.21
1906-1910	10.02	19.98	11.30	20.20	3.96	—	(12) 23.90	(12) 1.19

(1) 1874-77. — (2) 1884-85. — (3) 1880-84. — (4) 1887-90. — (5) 1885-89. — (6) 1893-95. — (7) 1890-93. — (8) 1897-1900. — (9) 1895-99. — (10) 1902-05. — (11) 1900-05. — (12) 1908-10.

and coke factories, and since the actual price of production cannot readily be calculated the easiest method for the factories is to follow the prices of sodium nitrate when disposing of the product.

To sum up, it may be said of the period of development up to 1910 that the prices of nitrate of soda depended on the prices of German, Austrian and French raw sugar and on those of American cotton, and that this twofold dependence has persisted up to recent years, in spite of the increase in the European output of nitrogenous materials and especially of sulphate of ammonia. This latter product is undoubtedly much utilised in sugar beet cultivation, and its consumption is thereby closely dependent on the extent of the areas under sugar beet. It may also be noted that the synthetic nitrogenous manures, calcium nitrate (Norwegian salpêtre), calcium cyanamide (*Kalkstickstoff*), were not formerly of any great importance on the world nitrogen market. As will appear from the following section, in consequence of the striking development of the synthetic manufacture of sulphate of ammonia and of various salpetres, especially those produced by the Haber-Bosch catalytic process. The earlier synthetic manures have not achieved that place in the world market that was at first perhaps expected for them.

If prices of products have exercised a dominating influence on the prices of means of production, they must necessarily also have influenced the consumption of these. In place of the data relating to pre-war consumption of commercial fertilisers which unfortunately are not available, the imports of sodium nitrate into the principal countries will be discussed here in relation to the price movements of cotton and beet sugar. In Table IV there are shown in juxtaposition for the period 1895 to 1913 the prices of raw sugar in Germany and the excess imports of sodium nitrate into Germany, and also the average prices for American cotton and the imports of sodium nitrate into the United States.

On comparing the Magdeburg price of raw sugar and the excess imports of Chile nitrate of soda into Germany the dependence of this latter on the former is particularly clear in 1902, when with the fall of the raw sugar price from 19.1 marks in 1901 per quintal to 15.3 marks in 1902 there corresponded a decline in the excess import of nitrate of soda from 506,000 to 452,000 tons. The low sugar prices of the wellknown crisis years 1906 and 1907 had no effect on the import of the fertiliser into Germany, but on the other hand the fall of the sugar price in 1912 from 24.6 marks per quintal to 18.5 marks in 1913 did correspond with a decline in the excess imports of nitrate of soda from 785,000 to 747,000 tons. The correspondence occurred also in the nineties, the price fall in sugar from 22.1 marks in 1896 to 19.4 marks in 1897 was reflected in a decline in nitrate of soda excess imports in the following year, *viz.*, from 454,000 tons in 1897 to 412,000 tons in 1898. This difference in time may be due to various causes, but does not invalidate the conclusion.

Unmistakeable too is the connection between the prices for American cotton and the import of Chile nitrate of soda into the United States of America. The price fall in average prices of American cotton from 7.3 cents per lb. in 1896 to 5.6 cents per lb. in 1897 is in correspondence with the decline in nitrate of soda imports from 128,000 tons in 1896 to 83,000 tons in 1897; the price fall from 1900

with 9.3 cents per lb. to 1901 with 8.1 cents per lb. is one year behind a decline in Chile nitrate of soda imports from 204,000 tons in 1901 to 181,000 in 1902. Then followed a sharp rise in American cotton prices from 8.2 cents per lb. in 1902 to 12.2 cents in 1903 and with it an increase in the import of nitrate of soda into the United States from 181,000 tons in 1902 to 252,000 tons in 1903. There was clearly a similar movement in the years 1909 and 1910. In 1909 an import of Chile nitrate of soda of 329,000 tons corresponds to an American cotton price of 9.2 cents per lb., in 1910 with a cotton price of 14.3 cents there was an import of 538,000 tons of nitrate of soda. From 1911 to 1912 the American cotton price fell from 14.0 to 9.6 cents per lb., and the nitrate of soda import similarly from 526,000 to 476,000 tons, while the rise of the American cotton price from 9.6 cents in 1912 to 11.5 cents in 1913 is accompanied by an increased import of nitrate of soda from 476,000 to 574,000 tons.

TABLE IV.

Years	1 Raw sugar price at Magdeburg 100 kg. mark	2 Germany excess import of Chile nitrate of soda 1000 m. tons	3 U. S. A. Average price of cotton cents per lb.	4 Import of Chile nitrate of soda into U. S. A. in 1000 m. tons
1895	19.9	446	8.2	125
1896	22.1	440	7.3	128
1897	19.4	454	5.6	83
1898	20.8	412	4.9	125
1899	21.8	513	9.3	122
1900	22.2	470	9.3	184
1901	19.1	506	8.1	204
1902	15.3	452	8.2	181
1903	18.0	450	12.2	252
1904	19.9	485	8.7	281
1905	22.4	520	10.9	273
1906	16.7	571	10.0	374
1907	16.8	568	11.5	332
1908	20.6	601	11.5	324
1909	21.2	637	9.2	329
1910	24.6	723	14.3	538
1911	25.2	703	14.0	528
1912	24.6	785	9.6	476
1913	18.5	747	11.5	574

The raw sugar prices in Germany and the cotton prices in the United States have accordingly had in these countries an unmistakeable influence on the import of Chile nitrate of soda, which in the period under review was still the most important nitrogenous manure in the world.

Unfortunately the lacunae in the available statistical material make it impossible to study the price relations with a view to obtaining even clearer evidence of these interactions. This however has proved to be practicable, as shown in Section V, for the period from 1918-1932.

IV.

In this article the year 1910 has been taken as the turning point in the structure of the world supply in nitrogenous substances, since it was at about that date that a complete transformation came about in the world market for these materials. Up to the time when the manufacture of sulphate of ammonia was first undertaken, about 1880, Chile nitrate of soda, almost the sole form of nitrogen known, was predominant on the world market; and even after the appearance of the competitor up to 1910 Chile nitrate of soda was the most important and the most in demand of the nitrogenous fertilisers on the world market.

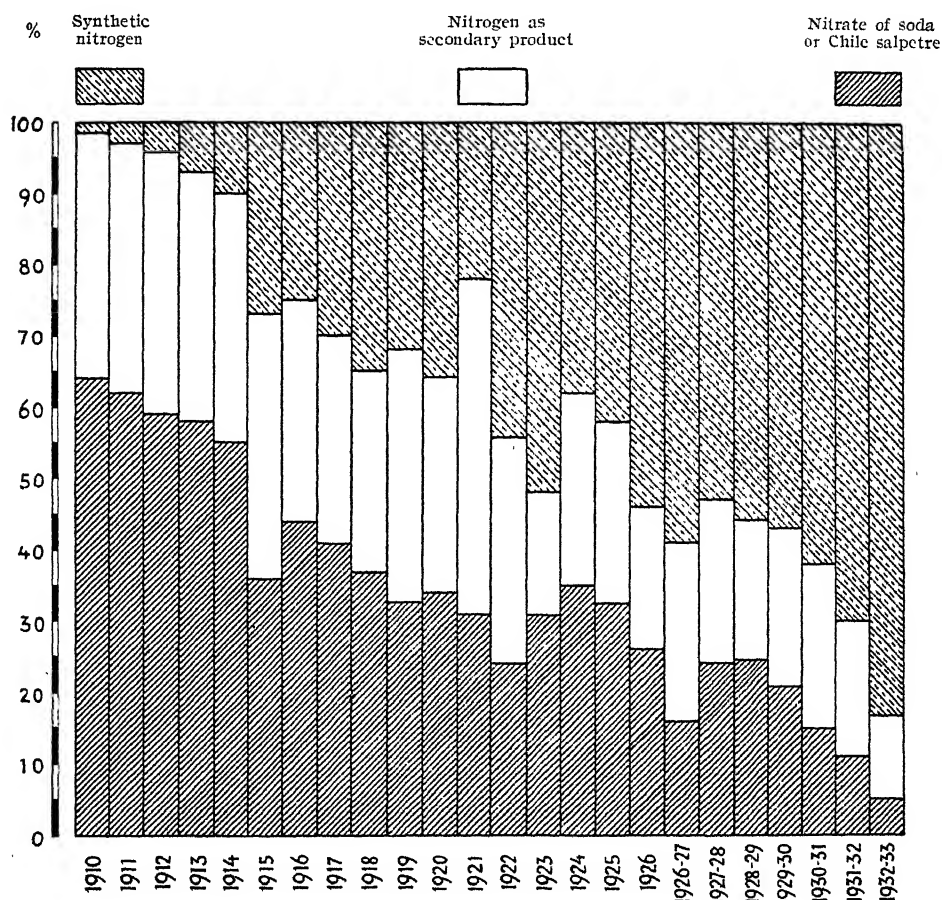
Another competitor which was to prove so serious a rival to this nitrate was already actually on the field. This was the synthetic manufacture of nitrogen, the utilisation of the practically inexhaustible stores of nitrogen present in the atmosphere.

The technique of this discovery was based on the natural phenomenon, known for some long time past, that the action of the electrical charges of the atmosphere is to transform the nitrogen of the atmosphere into nitric oxide which is washed by the rain out of the air, precipitated on to the earth, and there entering into chemical combinations with water, or more precisely with hydrogen, becomes transformed into nitrogen compounds which form plant nutrients. It is this principle that forms the basis of the Caro process of manufacture of calcium cyanamide as well as of the Norwegian process of manufacture of calcium nitrate, although in practice some important modifications have been introduced into the processes. In all of these very large quantities of electrical power are required, so that factories could only be erected for the purpose in localities where electric power was available at low cost, as is markedly the case in Norway, and also in Germany, Italy and other countries in certain districts.

It was the world war, disintegrating as it did the structure of the world economic system as heretofore existing, which had the decisive influence on the form taken by the demand for nitrogen from that time onwards. For the Central European powers which up to the declaration of war had covered their nitrogen requirements for the most part in the form of sodium nitrate, the nitrogen question became a vital one, since along with the large demand for nitrogen for the national intensive agriculture there arose suddenly the pressing needs for the army. There were no obvious possibilities of increasing the production of nitrogen, and in particular of nitric acid at high concentration. For various reasons since the beginning of the war there was a decline in the output of gas and coke works, which turn out ammonia water as a by-product. Hence it was impossible to count on any additional production in that direction. It was calculated that in Germany after the declaration of war the nitrogen supplies together with the anticipated production might cover the greatly increased requirements up to about the beginning of 1917 but that from that date a shortage must occur. It thus became essential to initiate new plants for nitrogen production, and there was some hesitation as to the method to be adopted.

Briefly, the choice fell on the Haber-Bosch method which was already known but not widely used, and it thus became practicable, with the help of a metallic catalyser, to transform into ammonia, or nitrate of soda compounds, the atmospheric nitrogen of which a virtually inexhaustible supply is available.

Changes in the Structure of the World Production of Nitrogen since 1910.



A grant from the State was made and the world renowned Leuna factory was erected, at Merseburg in Central Germany, where fixation of atmospheric nitrogen is carried out by the Haber-Bosch process.

It remains to describe what has occurred on the world nitrogen market from 1910 up to 1933. As shown by the graph, in the course of these twenty years a complete transformation has taken place in the world supply of nitrogen.

In 1910 Chile salpetre or nitrate of soda occupied about two thirds of the world market in nitrogenous substances, whereas in 1932-33 it had become no

longer of any great importance, its proportion measured in pure nitrogen amounting to not more than 4.4 per cent, of all material marketed. It was the war which gave the first impulse to this development, but this was only the beginning of the movement; it was not till 1922 and 1923 that the situation showed a radical change, when the synthetic fixation of nitrogen forged ahead not only as compared with nitrate of soda but also as compared with the nitrogen supplies from by-products, and reduced these two original sources of nitrogen to unimportance. In 1932 the world production of nitrogen was composed as follows: 83 per cent, the synthetic manufacture, mainly by the Haber-Bosch process, 12.6 per cent. ammonia obtained as a by-product of the coke and gas factories and only 4.4 per cent. of nitrate of soda.

This transformation on the world nitrogen market has, apart from the change in the predominant form of the commodity, a great importance for world economy, since Europe, and in particular Germany, one of the largest consumers in Europe of nitrogen, was thereby rendered independent of the supply from South America, or rather from Chile, and thus the world market which previously was fairly homogeneous was divided into two groups of interests, opposed to each other and with marked interactions. A great rivalry ensued, in particular between Chile salpetre or nitrate of soda and synthetic nitrate in which the latter gained the day and in spite of the agreement reached between the groups of interests there remained to the Chilean nitrate of soda, once the only important form, only a quite humble place on the world market.

The competition is in fact mainly a price rivalry. In the following section, an account will be given in detail of this contest between the original sodium nitrate and synthetic nitrate, or ammonium sulphate, and an examination will be made of the relations of the competing fertilisers to the products of arable cultivation for which these fertilisers are required.

CURT KAPPSTEIN.

(to be continued)

AGRICULTURAL CO-OPERATION IN AUSTRIA

§ I. — AGRARIAN AND ECONOMIC DEVELOPMENT IN AUSTRIA.

In order to make clear the present situation of agricultural co-operation in the Austrian Republic it may not be out of place to give briefly and in general outline some account of the economic and agrarian development of post-war Austria and to sketch the economic and social surroundings of the activities of the co-operative undertakings.

In the first place it should be noted that the economic structure of the new Austria has undergone marked changes. Whereas before the war, when the country was an integral part of the Austro-Hungarian Empire, the industrial production formed the larger proportion, 60 to 65 per cent., of the national income, agricultural production representing one third only, in recent years

the share of agriculture in the aggregate national income, amounting to some 9,000,000,000 to 10,000,000,000 schilling, has increased to the extent of forming half, or some 5,000,000,000 schilling. In consequence the agricultural character of the country is now more pronounced than formerly.

Before the war in exchange for industrial products Austria depended for the necessary supplies of agricultural products on the territorial area of the monarchy, cereals from Hungary, sugar from Bohemia, Moravia, etc. The post-war change was a radical one. In respect of the all important manufacturing industry, Austria lost her former markets, *viz.*, the neighbouring countries, which now were planning the building up of their own manufactures and the creation of a complete and self sufficing national economy.

In the report submitted by Austria to the International Economic Conference of 1927 the following statement is made: "Austria can obtain raw materials only with the utmost difficulty and in quantities that are inadequate. Agriculture has greatly suffered from the effects of the war. In addition the unfavourable position as to supplies has made it necessary to maintain in force the restrictive measures introduced during the war (maximum prices, food rationing, etc.), measures which by their very nature exercise an unfavourable influence on production. Moreover, the neighbouring States are isolated from each other by prohibitions of imports and exports scarcely mitigated in any way or only by quota agreements of the most complicated kind and frequently unsatisfactory."

The traditional economic life, the very setting of the country, disappeared, and the newly formed Danubian Republic could find its fresh economic orientation only by degrees and at the cost of suffering.

The decline in industrial production in Austria was rendered more acute by the world economic crisis, so that, taking the industrial production of 1928 = 100, the index-numbers for the following years become: 1929, 103; 1930, 87; 1931, 76; 1932, 66 (*World Economic Survey*, League of Nations, 1932-33, p. 84). Passing on from this formal representation of the decline in industrial activity, we come, as a concrete illustration of the changes in the internal structure of the national economy, to the very considerable reduction in the total number of cotton spindles in the last few years. As is well known, the textile industry, after those of iron and metal working and paper making, forms one of the most important branches of the industrial production of Austria. It still employs at the present time about 75,000 persons.

Number of spindles on 1 February.

1927	102 per cent. of the total of 1924
1930	87 " " " 1927
1933	84 " " " 1930

(Prof. John CONDLIFFE "Die Industrialisierung der wirtschaftlich rückständigen Länder". *Weltwirtschaftsarchiv* 1933, Heft 2, Bd. 37, p. 347). This indicates a continuous shrinkage of the cotton industry.

The unemployment figures, according to the unemployment insurance statistics, are very significant in this connection. They reached on 31 October 1934 a total of 331,994 persons, among whom the number of those coming from agriculture, forestry and market gardening amounted to 6,042.

At the same time industry declined, agriculture received an increased impetus, as appears from the following figures (in tons):

Agricultural Products	1922	1933	Index-number
Wheat	201,988	397,770	196.93
Rye	345,179	686,960	199.02
Barley	121,909	332,929	273.10
Oats	265,866	502,778	189.11
Maize	88,319	136,592	154.67
Potatoes	1,398,286	2,354,938	168.42
Sugarbeets	172,828	1,067,493	617.66
Milk (litres)	480,000,000 (1919)	2,800,000,000	583.34

In respect of production of cereals rye production has shown the most increase. From 1922, the year in which Burgenland was incorporated in the present territory of Austria, to 1933, the production of rye doubled itself. Rye has always formed the principal breadstuff cereal of the Austrian population. A nearly similar increase was attained by wheat production. A very marked increase will be noted in the production of milk and in that of sugar beet, the former being nearly and the latter more than sextupled.

The average yield per hectare in 1913 was exceeded for almost all agricultural products, or at least nearly regained, as the following table shows (quintals per hectare):

	Winter wheat	Rye	Barley (spring)	Oats	Maize	Beetroot	Potatoes (late varieties)
1913.	14.8	14.7	13.9	13.5	16.3	241.6	91.1
1931.	14.3	12.9	12.9	10.6	20.6	229.0	148.6
1932.	15.3	16.0	16.0	12.7	19.8	239.0	138.8
1933.	18.1	17.7	19.5	16.4	21.3	229.6	120.6

In 1933-34 it proved possible to cover by the national production the total demand, human and animal, for rye up to 98.71 per cent. as compared with 78.99 per cent. in 1928-29; for oats 95.98 per cent. was covered as compared with 82.97 per cent. in 1928-29; for potatoes the demand could be almost covered by the national production, up to 98.79 per cent., while for barley the percentage covered was 72.39. Austria completely met its own requirements in sugarbeet

by its own production, whereas immediately after the war the proportion covered was 6 per cent. only. It has proved possible to meet requirements in wheat by more than half, or 55.84 per cent. On the other hand in 1933-34 only about one fifth (20.05 per cent.) of the maize requirements were met, while in 1928-29 a percentage of 43.21 had been reached.

Austria now even exports some of her agricultural products, especially dairy products, whereas in the first post-war years milk had to be imported from abroad to supply the needs of children and sick persons.

In this way it has been possible to reduce the adverse trade balance which in 1931 stood at 867,680,000 schilling, in 1932 at 613,200,000 and in 1933 at 375,800,000 schilling. The adverse balance subsequently fell from the first half of 1933 to the first half of 1934 from 198,2400,000 to 153,900,000 schilling. It is true however that at the same time the total foreign trade turnover which reflects the world trade in its present state of collapse underwent a further decline. The value of imports fell from 2,208,234,000 schilling in 1931 to 1,191,300,000 in 1933 and that of exports from 1,340,554,000 to 815,500,000 schillings in the corresponding years. In comparison with the former Austro-Hungarian monarchy where in 1912 the export quota per head of population was 93 schilling, in the new Austria this quota in 1929 was 342 schilling, and 125 schilling in 1933. In consequence, even in this year of crisis it was still 34 per cent. higher than it had been under the former monarchy. Among the States which formerly constituted the Austro-Hungarian monarchy, Austria is the one which, both from the point of view of the per capita export as from that of the quota per area (10 schilling per square kilometre in 1933) has the largest export.

As regards the social structure of the population in 1934, out of a total population of 6,739,062 persons rather more than one fourth, or 1,861,856 persons, were to be found in the Federal capital. If Vienna be left out of account, however, Austria may be regarded simply as an agricultural country. The agricultural population does not form more than about 30 per cent. of the whole population, but taking the corresponding figures for the different provinces of the Federation it appears that apart from Vienna and Vorarlberg more than half of the population of any province is agricultural. In Lower Austria the proportion exceeds 60 per cent., in Burgenland 75 per cent., etc. This is clear proof of the considerable importance of agriculture for the greater part of Austria.

As regards the system of tenure of agricultural land in Austria, which is a decisive element in the development of agricultural co-operation, the position in accordance with the farm census of 14 January 1930 appears below.

In the distribution of agricultural lands it is noticeable that the class of large farms of 100 hectares and over constitutes, numerically, 1.4 per cent. only of the total number of farms, but that in area these farms constitute nearly half, 46.7 per cent. But the fact must be taken into account that out of the total area of these farm estates, 3,489,557 hectares, more than 3,000,000 hectares consist of forests, alpine pastures and unproductive lands. In consequence the cultivated land of large estates occupies at the present time only some 5

Size-classes		Number of farms	Total area ha.
Farm holdings consisting of parcels of less than	2 ha.	118,783 (27.4 %)	111,393 (1.5 %)
Small peasant farm holdings	2 ha.	118,783 (27.4 %)	111,393 (1.5 %)
Medium-sized	5-10 "	76,004 } (34.5 %)	544,987 } (21 %)
	10-20 "	73,446 }	1,058,550 }
Large farm holdings	20-50 "	52,783 } (14.1 %)	1,541,423 } (27.5 %)
	50-100 "	8,290 }	556,921 }
Large estates	100-200 "	3,194 }	444,957 }
	200-500 "	1,728 } (1.4 %)	527,145 }
	500-1000 "	536 }	373,851 }
	Over 1000 "	562 }	2,143,604 }
Total . . . ha.		433,360	7,628,467

to 6 per cent. of the total area. Latifundia in the true sense of the word have no existence in Austria.

The holdings consisting of separate parcels and the small holdings are the most numerous, amounting to 50 per cent. numerically and representing 5.8 per cent. of the total area; the medium-sized peasant holdings of 5 to 20 hectares constitute 34.5 per cent. of the total number of farms with an area representing 21 per cent. of the total area, while the figures for the large farm holdings are 14.1 per cent. numerically and 27.5 per cent. in area. The post-war agrarian reform, which has been carried out in Austria as elsewhere less for economic than for social reasons, has resulted in a small increase in the number of small holdings and has somewhat redressed the balance of the distribution of ownership of agricultural land.

In view of the importance of agricultural co-operation for the carrying out of the agrarian reform in Austria and for the establishment of the new farm settlers, it was enacted that "under certain conditions co-operative societies may acquire parts of a farm for the purposes of undertaking land settlement, even if the owner of the farm does not apply for expropriation and provided that such part is not essential to the systematic farming of the whole. The co-operative societies may further present an application for the purchase of any peasant holdings which have been completely incorporated in large estates."

It can be taken as an accepted fact that, in an economic structure of agriculture in which the small size classes preponderate, co-operation will have, *ceteris paribus*, more opportunities of development. Striking instances of this occur in Switzerland, Denmark, etc., where, with a farm structure in which the small and medium-sized holdings predominate, there has been a very vigorous development of co-operation to the point of serving as a model for other countries.

By means of the social bond which unites the peasant farming population the small holding seeks in co-operation the most appropriate means for compensating its own economic insufficiency and bringing its own productive capacity up to the level of that of the large estates.

The above is a brief sketch of the economic and agrarian characteristics of Austrian national economy and will serve as a basis for the account it is proposed to give of the development of agricultural co-operation.

§ 2. — THE LEGAL BASIS OF THE CO-OPERATIVE ORGANISATIONS.

In Austria the idea of the voluntary banding together of farming forces, by themselves economically weak, for the protection of their common interests could take definite shape only in the second half of the XIXth century, in other words, only after the emancipation of the peasants under the Austrian Empire. Although the system of land tenure differed markedly in the different Crown lands, and although the legal position of the peasants varied from one province to another, it may generally be stated that the definitive regulation of the feudal relationship of serfdom was not introduced till the law of 7 September 1848. The peasant population were then freed and thereby the barriers to the organisation of the farming system were removed. The dues in kind as a component part of the whole feudal system of land tenure were abolished and a money economy prevailed increasingly in the country. The new regulation of economic activity, although in the first instance mainly directed on the town and urban economic organisations, took shape in Austria in the promulgation of the commercial law of 1856 and of the law on the associations of 1867. These two laws subsequently became the authority for the legal management of agricultural unions and co-operative societies, which began to be formed here and there.

It was the European crisis of the years from 1870 to 1880, and in particular the disastrous season of 1873 for Austria, which led to the systematic formation of co-operative societies with a view to making it possible to meet to some extent the credit requirements of the peasants. In this year the law on co-operative societies was promulgated. The legal structure of present-day agricultural co-operation finds its main basis in the principles of the law on co-operative societies enacted at that time in the Danubian monarchy. In spite of the political revolutions and territorial changes of the new Austria the law on co-operative societies, as also that on share companies, which regulates the most important form of collective enterprises in the national economy, has not been altered in essentials, since the objectives of the co-operative societies, as well as the means by which they attain these ends, have remained the same, as also as the economic organisation of the country as a whole.

The leading principles of the law are as follows. Taking as basis the definition of co-operative societies in the German law on co-operation of 1867, the co-operative society is defined as an association with unlimited membership, which endeavours to further the economic activity of its members by means of a joint business management or by the provision of credit, such associations

being known as *Erwerbs- und Wirtschaftsgenossenschaften*. These three characteristics, in the sense of the law, determine the distinctive nature of co-operative undertakings. The first feature, the unlimited membership, distinguishes them from the share companies, where, as is well known, the number of members is fixed by that of the shares issued, each member having only one vote independently of the number of shares held. The co-operative society does not constitute in the first instance an amalgamation of capital but a grouping of persons, the variable number of members necessarily involving fluctuation in the funds of the society.

In the second place the co-operative society must have an economic purpose; it may be a loan society, or may take the form of an association for purchase or storage of raw materials; it may function as a co-operative society of production, for distribution, housing, etc. Its objects should not be primarily those of social policy or general education, but should be merely the protection of the interests or the encouragement of the activity of its members who are at one and the same time the owners of the co-operative undertaking and its customers, differing in this respect from trading enterprises which work for third parties. None the less, in practice, it may be noted that it is frequently advisable in order to obtain a higher output to bring into the undertaking persons who are not members. Finally the management of the societies must be carried on jointly, which constitutes the essence and the object of all co-operative activity.

The organs of the co-operative society include: the general meeting, the legislative body of the society, which may be summoned if one-tenth of the members so desire, the Executive Committee and the management council. The Committee is empowered by the general meeting to manage the affairs of the society, and represents it in court and elsewhere. The competence of the Committee in the representation of the society extends to all the business for which, in accordance with the civil law in force, there must be a special power granted in accordance with the nature of the business (§ 18). The Committee is expected to publish, at latest within the first six months of each financial year, a balance sheet for the past year. By the law relating to co-operation there may be attached to the Committee a management council chosen from among the members of the society, excluding the members of the Committee. This body, which is not subordinate to the Committee but acts in coordination with it, supervises the conduct of business in all branches of the administration, audits the accounts and the balance sheets and reports yearly to the general meeting.

The foundation and liquidation of co-operative societies as voluntary undertakings of a private character is entirely at the option of the society. The foundation may come about by the grouping of at least seven persons in accordance with the provisions of the German, English, French, Swiss and Belgian laws on the co-operative societies. The society becomes a corporate body only after registration (§ 8). Before registration, the co-operative society does not exist as such and cannot in consequence under its signature claim rights or make contracts, or appear in court. The register of co-operative societies is kept

by each commercial court. In the register are entered all prescribed particulars, such as the trading name of the society, the Committee and its composition, the components of the capital, etc. The liquidation of the co-operative society may be decided by a majority of at least two-thirds of the votes. It happens only rarely that a society is dissolved by the administrative authorities, although they have the right to suppress societies that have exceeded the legal limits of their competence.

As regards liability of the society, which represents the basis of its credit capacity, the societies may be formed either with unlimited or with limited liability. Every member of a limited liability society is liable, in the event of failure or liquidation of the society, for its engagements—in so far as no higher liability has been established by the rules of the society—not merely with his shares, but also by a supplementary sum as fixed by the rules. The members of a society with unlimited liability are jointly and severally liable for all the engagements of the society, in so far as the assets do not cover the engagements in the event of liquidation or failure. The private creditors of a member are not authorised to claim in satisfaction of their demands effects, or credits, forming part of the property of the co-operative society. As regards the creditor more security is naturally offered by the unlimited liability of the society. It must however be observed that on the other hand it is the introduction of the legal form of limited liability which has enabled the co-operative societies to develop so rapidly. It is only since its introduction that the appropriate juridical form was created for all these societies which are dependent only to a very small extent on foreign capital. The general tendency in the foundation of co-operative societies is now in favour of an increased application of limited liability. The unlimited liability form is disappearing, except as the legal basis of co-operative credit societies.

During the war, when in some regions the collapse of many co-operative societies had to be reckoned with, new provisions were enacted, on 21 March 1918, on the procedure to be followed in case of failure of a co-operative society. *Inter alia*, there was introduced unlimited liability to make supplementary payments. With this kind of liability, if the shares were not adequate to the covering of the losses, the members were expected to make supplementary payments up to the full total of the liabilities in proportion to the shares held by them. The estimate of the contributions to be paid must be submitted to the bankruptcy court. For the creditor this form of liability is less favourable as he cannot make good his claims on the whole of an individual member's property. Possibly the adoption of this form was solely the result of the special war conditions, or possibly the long drawn out procedure in the case of failures made it unpopular; in any case the form has not been so far widely adopted in Austria. Even in Germany, the country where it was first employed, it applies only to about 0.3 per cent. of the total number of agricultural co-operative societies. The amending law of 14 July 1920 again introduced into Austria what were known as co-operative societies without guarantee, but only for consumers' societies. In practice these have almost no importance at the present time.

Out of all the urban and rural co-operative societies registered at the beginning of 1932, numbering 5,738 in all, 1,800 were Raiffeisen banks, all with unlimited liability; 1,986 were agricultural co-operative societies, including 1,975 with limited and 13 only with unlimited liability (*viz.*, 9 in the Vorarlberg, two in the Tyrol, one in Upper Austria and one in Carinthia), and 290 were consumers' societies, including 279 with limited and 11 with unlimited liability, *viz.*, four in Upper Austria, four in the Vorarlberg and one in Lower Austria, one in Salzburg and one in Styria (*Statistisches Handbuch für die Republik Oesterreich*, Wien 1933, p. 110).

§ 3. — PRINCIPLES OF THE AUDIT OF CO-OPERATIVE SOCIETIES.

At the time of the enactment of the law on co-operative societies, the movement was still in its early stages. Before any conclusions could be drawn as to the means for ensuring by legislation a successful development of this new form of rural association, it was essential that many aspects of co-operative activity should become clear in practice. Among these were in the first place the legal audit of the societies, the control of their activity, in accordance with their rules and legal prescriptions. The enactment of a law on the audit did not take place till 30 years after that of the law on co-operative societies, *viz.*, on 10 May 1903, although naturally in the meantime the voluntary audit of the societies' accounts was carried out by the federations. The law however transformed this optional audit into a biennial compulsory audit.

It was due to the co-operative societies themselves that this audit was introduced, although the obligatory character imposed certain restrictions on them. Thus in the Report presented by Dr. Lekusch, Director of the Central Federation of Co-operative Societies, to the International Congress of Agriculture held at Prague in June 1931, the following statement appears: "Since for some time past many co-operative societies have voluntarily combined to form groups, to which they have entrusted of their own accord the audit operations prescribed by the measure proposed, this law may be said to have been in same degree anticipated by the societies. The parties concerned had recognised the necessity for modifying the principle of almost unlimited autonomy on which was based the legislation relating to the societies known as *Erwerbs- und Wirtschaftsgenossenschaften* (Co-operative Industrial and Economic Societies), and their efforts were concentrated in this direction. The fact that those in charge of the administration were not always equal to their task, that their carelessness, or that of the members, frequently amounted to indifference, and that it even happened that the co-operative bodies became guilty of malversation, all this resulted, in certain cases, in disasters that were bound to bring discredit on the principles of autonomy. It was accordingly essential to remedy these drawbacks by the institution of the audit service, the more easy to effect as the audit system is in complete harmony with the principle of self-government." These remarks throw light on the reasons which induced the co-operative societies to supervise more closely co-operative activity and to safeguard it against excess and abuses.

In virtue of the legal prescriptions relating to the audit, every federation of co-operative societies constituted in accordance with the legal provisions is empowered to appoint an auditor for the agricultural co-operative societies which are affiliated to the federation. To acquire the right to exercise this power the auditing federation must: 1. be registered as an association in accordance with the law of 1873 on co-operative societies; 2. have as its object the audit of the co-operative societies affiliated to it; 3. include at least as a rule 50 co-operative or other societies. A smaller number is allowed only when the federation in question includes all the co-operative societies of a province or at least all the co-operative societies in existence in the province with similar economic objects.

The audit is frequently carried out by the State itself, especially when the co-operative societies are subsidised by the State or by the province or where loans without interest have been made to newly formed societies. This is expressly stated in article 14 of the law on audit. It is in this way that the legal audit is still made to-day in Lower Austria, Upper Austria, and Salzburg, and in Vorarlberg it was also carried out by the organisations of the province in question up to 1 July 1933. Since that date the Federation of agricultural co-operative societies in Vorarlberg has been placed under the legal audit of the General Federation of agricultural co-operative societies in Austria. In Lower Austria the Government audit is entrusted to the important representative body of the Lower Austrian Chamber of Agriculture, the influence of which on the development and progress of agriculture in general and on the development of co-operation in Austria is very considerable. In the other provinces, *viz.*, Burgenland, Carinthia, Styria and the Tyrol, the legal audit has been for a long period carried out by special co-operative auditing associations. In these provinces, where the Government of the province lays no claim to carry out the audit, the General Federation of Agricultural Co-operative Societies in Austria (*Allgemeiner Verband der landwirtschaftlichen Genossenschaften in Oesterreich*) constitutes the organ for legal audit of these federations of the provinces in virtue of a decree of the Federal Ministry of 2 July 1924.

Subsidies are frequently granted by the Government for the regular execution of legal audits, as in many cases the expenses cannot be met by the co-operative societies which undergo audit. On the other hand there is no special fee assigned to the audit federations for this purpose.

According to the terms of the law, the auditor has not only to supervise and check the accountancy, the proper keeping of the trading books, the establishment and closing of the accounts in good and due form, but he should also take into consideration whether the co-operative society, in accordance with its constitution and activity, is meeting the requirements of the law on co-operative societies and the aims of the co-operative system. He must in consequence ascertain if on the one hand the organs of the co-operative society in question are observing the legal prescriptions, and on the other hand if the management of the society is such as to ensure successful working. By the terms of the law the auditor must undertake not to communicate the result of his observations to third parties; he must in particular abstain from any comment likely

to prejudice the credit of the co-operative society. In accordance with the law on the audit, the auditor's report must not make mention of the activity and of the management of the society except in cases where he has had to pass criticism.

The law allows the societies the free choice of their audit central and gives them the opportunity of transfer to the central under which they formerly were placed. As this opportunity of changing the central has been more especially taken by co-operative societies the affairs of which are in disorder with a view to distracting the attention of the competent bodies from their unfavourable situation, it is proposed to cut short by means of legal prescriptions such practices which prejudice the interests of the members of societies.

In order to prevent the formation of fictitious undertakings involving misuse of the co-operative form, the federal law of 3 August 1934 provides that the entry of a co-operative society in the co-operative register may be allowed by the court only if the association to be founded has obtained the promise of admission into a recognised audit federation, or if the government of a province, or a central agricultural institution, has declared that it will undertake the audit of the co-operative society applying for registration. If the society in question does not receive within four weeks a reply from the audit federation or from the provincial Government to its application, the application is considered to have been refused. After consultation with the federation or the provincial government refusing admission, the court can allow exceptions only if from the economic point of view there are no positive reasons against the foundation of the co-operative society and if it appears probable that the society will be managed in the true spirit of the law on co-operation.

The compulsory audit introduced by the law has increased the confidence in co-operative societies and has also resulted in larger membership. By drawing attention to the errors, often made involuntarily by the administration, the audit is of great service to the society enabling it to give a better direction to its activity as a result of the good advice obtained.

Within the last two or three years co-operative and audit law have been subjected to a partial reform carried out on the basis of experiments made. It was particularly advisable to alter the provisions relating to the audit carried out by the State, which, it seems, has never been a success, and to entrust this audit to the competent co-operative audit federations. From 11 April 1933 a committee of experts was constituted attached to the General Federation of agricultural co-operative societies and this body has entered upon the relevant preparatory work.

§ 4. — THE GENERAL FEDERATION OF AGRICULTURAL CO-OPERATIVE SOCIETIES.

The fall of the Austro-Hungarian monarchy brought with it the dissolution of the General Federation of Agricultural Co-operative Societies (*Allgemeiner Verband der landwirtschaftlichen Genossenschaften*) which had been in existence since 1898 and which included as members 9,000 societies with 30 federations

in the different divisions of the Dual Monarchy. After the war, in 1919, the *Agrotterra*, a limited liability company founded during the war for the encouragement of co-operative trade, was entrusted with the representation of the interests of the Austrian agricultural co-operative societies. In 1923 a section of this *Agrotterra* was transformed into the General Federation of Agricultural Co-operative Societies which was constituted as a corporate body and from that time this has acted as the Central of all the co-operative societies.

The main functions of this Federation are: to encourage and to develop all agricultural co-operation in Austria, to represent and to safeguard the common interests of these societies in respect to legislation and administration, to advise and to support its members in all co-operative matters, to organise the agricultural co-operative societies on a systematic basis, and finally to supervise the conduct of business by the societies.

The General Federation also organises courses in co-operation and co-operative "days," and publishes the central organ of the agricultural co-operative societies (*Oesterreichische landwirtschaftliche Genossenschaftszeitung*), etc. In addition, in virtue of the law of 10 February 1927, it is called upon to prepare statistics of agricultural co-operation. Its statistical section has already supplied valuable material on different aspects of co-operation, *e. g.*, on the number of members of the societies, the total of their shares, the total turnover of the societies, the deposits and loans made, etc.

In regard to the question of taxation in relation to co-operation, in accordance with the law of 6 June 1924 the Raiffeisen banks, as well as the federations of these banks, are exempt from taxes, in so far as they are constituted under the form of registered co-operative societies, limit their trading operations to their members, pay interest on the shares at a rate not exceeding the current discount allowed by the National Bank of Austria, and allocate any surplus to a reserve fund. By an ordinance of the Federal Government of 19 May 1933 the central co-operative banks have been exempt from the taxes payable on the transfer of financial business from bank to bank.

In order to establish a closer contact between the agricultural co-operative societies and the principal agricultural organisations, the Committee of the presidents of the central agricultural organisations is represented in the presidential bureau of the General Federation of Agricultural Co-operative Societies and on the other hand the General Federation takes part in the discussions of this Committee.

The following co-operative societies and federations in the separate provinces of the Austrian Republic formed part of the Federation on 1 January 1934.

As appears from the table below the total number of co-operative societies on 1 January 1934 was 3,617 as compared with 2,220 on 1 January 1914. In spite of the war, revolution and economic crisis their number increased by 62 per cent. in the post-war years, a fact which may in part have relation to the changes in the economic structure of the country. About half the number of the co-operative societies consists of Raiffeisen banks, one-fourth are dairy societies; then follow in decreasing order the stock breeding and stock marketing societies, the societies for purchase and sale and the co-operative societies of various kinds.

The agricultural co-operative societies are most widely diffused in Lower Austria, where one half of these societies are to be found, or 1,755 in all. Their number is lowest in Salzburg, 76 only, nearly all Raiffeisen banks with their federations. Lower Austria is thus well in advance of the other provinces of the Confederation in development of agricultural co-operation, although considerable progress may be noted in all.

Provinces of the Confederation	Credit associa- tions	Co-oper- ative dairies	Stock- breeding and marketing societies	Co-oper- ative societies for purchase and sale	Miscella- neous co-oper- ative societies	Co-oper- ative Federation s	Total numbers	Aggregate membership
Lower Austria . .	583	709	310	59	91	3	1,755	95,000
Styria	281	39	96	11	57	3	482	90,000
Upper Austria . .	286	23	8	16	20	1	354	71,000
Tyrol	190	76	15	5	21	2	309	39,000
Carinthia	189	3	13	27	31	3	266	50,000
Burgenland	116	84	2	6	19	1	228	32,000
Vorarlberg	84	54	1	—	7	1	147	19,000
Salzburg	75	—	—	—	—	1	76	12,000
Total . . .	1,804	983	445	124	246	15	3,617	408,000

This development of co-operation corresponds fairly closely to the relative territorial extent and to the density of population in the different provinces. In this respect Lower Austria stands first with an area of 1,930,119 ha., and a population in 1934 of 1,521,000 persons out of a total Austrian population of 6,534,244 inhabitants. Salzburg, on the other hand, occupies the sixth place in respect of area, *viz.*, 715, 324 ha., mainly alpine pastureland, and the seventh in respect of population, 248,188 in 1934, only just in advance of Vorarlberg which takes the last place with 157,358 inhabitants. Naturally it is not here proposed to establish any direct causal relations, but merely to comment in passing on the parallelism of these various facts. The intensity of co-operative development is to be attributed to other economic and social causes, as has been indicated in Section I.

In accordance with the preceding data, the number of individuals grouped in agricultural co-operative societies on 1 January 1934 in Austria was 406,000. It is however probable that some of these persons have been counted twice over as a farmer often belongs to two, and even to more, societies at one time. The estimate may certainly be made that 200,000 farmers are grouped in the agricultural co-operative system. As the peasant farming family is usually reckoned at five persons on the average, this figure may be interpreted as representing about one million individuals of the farming population, that is to say, more than half of the agricultural population of Austria come under the co-operative organisation. These figures are of course merely approximate. In the absence of any reliable data making an exact calculation possible, these estimates are put forward as a starting point for further studies.

It would be very desirable to ascertain what number of farms are grouped in the co-operative system and which are the size categories of farms most concerned in the co-operative movement, as also what is the aggregate area of cultivated lands of these farms. Unfortunately in Austria, as in almost all countries, there is a nearly complete absence, in statistics of co-operation, of data of this kind. The crude figures, detached from their economic content and without relation to farming practice, scarcely provide an exact picture of the actual effective utility to agriculture of the co-operative element. It is certainly from no want of good will but only from want of the necessary funds that the General Federation does not undertake, as it did in pre-war years, the compilation of accurate returns.

As regards external structure, the General Federation of Agricultural Co-operative Societies included on 1 January 1934 the fifteen following federations shown with the co-operative societies affiliated to each federation:

(1) *Landesverband der landwirtschaftlichen Genossenschaften im Burgenland*, with 227 co-operative societies, (audit, legal defence of the interests of co-operative societies, financial operations and trade in products);

(2) *Landesverband der landwirtschaftlichen Genossenschaften in Kärnten*, with 163 societies, (audit, legal defence, financial operations and trade in products);

(3) *Allgemeine landwirtschaftliche Genossenschaftskasse für Kärnten*, with 57 societies (trade in products);

(4) *Sveža koroskih zadrug* (Federation of Carinthian Co-operative Societies, includes the Slovene societies of Southern Carinthia and of Klagenfurt and uses the Slovene language) with 43 societies (audit, legal defence and trade in products);

(5) *Niederösterreichische landwirtschaftliche Genossenschaftszentralkasse*, founded in 1898, with 1,750 societies (legal defence, financial operations);

(6) *Verband landwirtschaftlicher Genossenschaften in Niederösterreich*, with 106 societies (trade in products);

(7) *Niederösterreichische Molkerei in Wien*, with 154 societies (handling of members' milk);

(8) *Oberösterreichische Genossenschafts-Zentralkasse in Linz*, founded 1900, with 345 societies (financial operations);

(9) *Verband der Raiffeisenkassen des Landes Salzburg*, founded 1905, reorganised 1927, with 75 societies (financial operations);

(10) *Landesverband der Steierischen Raiffeisenkassen und landwirtschaftlichen Genossenschaften in Graz*, founded 1900, with 459 societies (audit, legal defence, financial operations);

(11) *Steierischer Landwirtsverband*, with 272 societies (trade in products);

(12) *Verband Steierischer Milchgenossenschaften*, founded in 1927, with 30 societies (representation of dairying interests, by regulation of supply and demand, with a view to obtaining a planned and orderly handling of the output and distribution according to the season and locality of production, together with a remunerative price to the producer);

(13) *Tiroler Genossenschaftsverband* with 221 societies (financial operations and trade in products),

(14) *Anwaltschafts- und Revisionsverein des Tiroler Genossenschaftsverbandes* (Innsbruck) with 307 societies (Audit, legal defence);

(15) *Verband landw. Genossenschaften in Vorarlberg (Bregenz)* with 146 societies (legal defence, financial operations, trade in products).

These agricultural co-operative federations have all been founded as co-operative societies registered with unlimited liability, with the exception of the *Anwaltschafts- und Revisionsverein des Tiroler Genossenschaftsverbandes* established under the form of an association (*Verein*). According to § 3 of the amended rules of the General Federation, dated 19 December 1930, other agricultural associations (*Körperschaften*) may also exceptionally be admitted as members if their inclusion is considered to be in the interests of Austrian agricultural co-operation.

For the discussion and elucidation of the various co-operative questions there have been in existence since 1928 within the General Federation, five special committees consisting of representatives of the different national federations. Four of these deal respectively with: co-operative audit, financial operations, trade in products, handling of milk; and a technical Committee deals with proposals for amendment of co-operative law and the law on audits.

The activity of the General Federation may be illustrated by means of a few figures. The combined balance sheet of the member federations undertaking financial operations and trade in products showed as follows at the end of 1932:

Liabilities:

Shares: 3,029,000 sch. with an aggregate guarantee of 67,426,000 sch.

Reserves: 2,701,000 sch.

Deposits in hand: 57,656,000 sch.

Savings deposits and deposits on current account (end of 1930): 83,385,000 sch.

Owed by federations for goods received and bank debts: 20,003,000 sch.

Assets:

Deposits in financial institutions: 8,697,000 sch.

Loans, including sums owed to federations for goods supplied on credit: 59,468,000 sch.

Securities and stocks held: 7,002,000 sch.

Real property, including inventory, furniture, etc.: 3,978,000 sch.

The balance sheet total for 31 December 1932 showed: 91,326,000 sch.

Before the war the *Allgemeiner Verband der landwirtschaftlichen Genossenschaften* was a member of the *Internationaler Bund der landw. Genossenschaften* the headquarters of which were at Berlin, which ceased to exist after 1913. At present the General Federation is a member of the International Committee of Agriculture

of Paris and of its Sub-Committee for agricultural co-operation. It is also a member of the Permanent International Committee of Agricultural Associations attached to the International Institute of Agriculture at Rome.

§ 5. — THE CREDIT SOCIETIES (SAVINGS AND LOANS BANKS).

The activity of the agricultural co-operative societies takes in Austria as in other countries a great variety of forms, but the prevailing type as also in Central Europe generally, is that of the Raiffeisen banks. The object of these banks which according to their rules are based, as has been stated, on the principle of unlimited liability, is to improve the position of their members by granting them loans for current cultivation needs, business operations and general requirements. These loans are granted within the limits fixed by the general meeting of members and by decision of the Executive Committee. As a general rule the banks cannot grant long term mortgage loans, at most for one or two years only, and these must always be at call, the intention being to ensure the possibility of liquidating the credits at any time. Current accounts may be opened for members doing thriving business.

Before granting a loan the bank must ascertain whether the applicant offers the necessary financial security and if he is creditworthy, and further enquire into the purpose for which the sums lent are intended, while fixing the terms of repayment in accordance with these objects. Loans, including credit on current account, must be guaranteed adequately, so that no risk is entailed for the credit institution. The guarantee may be supplied by offering security, depositing bonds or mortgages. All business involving risk is avoided in the conduct of the banks' affairs. The law prescribes that the operations of the bank must extend only to one or more communes, since in this way the bank has the security in that the inhabitants of the same commune are liable to the same vicissitudes of fortune, and on the other hand it is always possible for the bank authorities to make themselves acquainted with the personal situation of the individual members in the small circle concerned.

Loans are made against properly established documents of acknowledgement, and credits on current account allowed with the conclusion of special agreements. Under § 64 of the rules, bills of exchange are unconditionally excluded in any grant of loans to members. At the present time, however, it is being widely discussed in co-operative circles whether, in view of the serious economic situation, and following the practice introduced into Czechoslovakia, the bill of exchange might not be obtained by the society from the appropriate Federation and discounted for the purpose of procuring the ready money required. The Auditors' Conference held at Salzburg in the month of September 1933 passed a unanimous resolution requesting the Executive Committee of the General Federation of Agricultural Co-operative Societies to make a thorough examination of the question of the bill of exchange as a negotiable instrument.

In order to fulfil its role as village bank, the credit society obtains its funds in the following ways: in the first place, from the members' shares, each member being expected to subscribe at least one share. No member may hold more than

25 shares in the credit society. The shares must be paid up in ready money at the time the member is admitted, and are not transferable. In the event of the dissolution of the society the shares are repayable according to the funds available after meeting the demands of the creditors. In the second place funds are obtained from the deposits accumulated which can be accepted from any source and consequently not only from members.

Statistical enquiries show that more than half and sometimes more than 60 per cent. of the total deposits made at the Raiffeisen banks come from persons engaged in local industry, trade, from workmen, etc. This is further proof of the great confidence enjoyed by these societies, not only among the agricultural population, but among the rural population in general. "It has never been denied," to quote the *Oesterreichische landwirtschaftliche Genossenschaftszeitung* of 21 February 1934, "that our Raiffeisen banks were founded above all for the rural population among which the farming class always bulk large. It would however be a great mistake to exclude work people and employees, artisans and dealers. It is only by the support and full equality of rights of all the producing and working classes, that our Raiffeisen banks can fulfil their mission as popular banks, and that an assurance in obtained of healthy progress."

In the third place, the Executive Committee is authorised to contract loans, according to requirements, within the limits established by the general meeting. Finally a source of receipts is provided by the entrance fee, which must be paid by each member as a contribution to the costs of administration. This charge is not reimbursed, in the event of the members's withdrawal from the society and remains the property of the society.

The foundation of the Raiffeisen banks took place everywhere before the war with the active co-operation of the State, or of the administrations of the province (Diets). When it was recognised that these small groups of the farming population, established on a corporative and co-operative basis, proved to be of great importance, not only for the social development of the farming class, but also as an economic factor of the general agrarian policy, the setting up of these banks was encouraged by means of foundation capital, subsidies and loans free of interest, etc. This is also true of the whole movement of agricultural co-operation, but in particular of the co-operative credit societies, since the economic importance of cheap credit to the country is very great and of general application. In respect only of material support afforded by foundation capital, a special credit item has since 1899 appeared in the State budget annually for nearly 1 million crowns for this purpose. The Ministry of Agriculture formed in connection with the *Landeskulturräten* (Provincial Councils of Agriculture) special committees for the business of agricultural co-operation, and endeavoured, in conjunction with the diets of the provinces and with the assistance of the political authorities and the agricultural corporations, to popularise the co-operative idea in the rural areas.

From the standpoint of the principle of the purity of the co-operative idea, or the self-help principle, which lies at the basis of the societies, this State financial aid, pushed somewhat too far, was considered by the champions of the co-operative system as an encroachment on the side of the authorities and was described

as a misconception of the co-operative idea, that is to say, of co-operative initiative and independence. The demand was rather for the largest possible measure of neutrality on the part of the State. "Agricultural co-operation in Austria," says Prof. Grünfeld in his *Handbuch des Genossenschaftswesens*, 1928, Vol. I, p. 132, "in spite of Raiffeisen and Kampelik, has been in the main a matter of official propaganda, which over a long period kept agricultural co-operation in a state of dependence. Not only were the receipts of the associations up to nearly one half based on State revenues, but the audit was carried out by State officials."

The subsidies which the Raiffeisen banks had received from the State completely ceased with the outbreak of war, and the co-operative societies were informed, by the Minister of Agriculture, in the Decree of 2 August 1914, that they were henceforth dependent on their own resources only and must count only on these. The policy of subventions was, however, renewed after the war and undoubtedly in the interests of the societies themselves. Dr. Schandl recently expressed himself as follows at the Fourth International Conference of Agricultural Credit held at Budapest in June 1934, in reference to the countries of Central Europe generally: "It is not that the co-operative societies request State support or credit funds placed at their disposal by the State, for, in principle, it is much more desirable that the agricultural credit societies should maintain their independence towards the State. It is however obvious that, in exceptional times when even the large financing institutions receive material support from the State in order to fulfil the operations of public interest which fall to them to carry out, the credit co-operative societies could not refuse to undertake, on the request of the State, operations of public interest, and in this case it is clear that they also require the material support of the State. When these exceptional times are passed, the agricultural co-operative credit societies will have to return to their principle of independence, that is to say to a purely co-operative basis, attending exclusively to the interests of the formation of capital and the supply of credit to their members, and that without any assistance from the State. It is perhaps unnecessary to emphasise that as State support there could not be considered the fact that banks of issue allow to the central organisations of the co-operative credit societies rediscount credits on the same conditions as are allowed to other financing institutions."

The economic importance of the Raiffeisen banks diminished somewhat during the war. It is true that savings deposits rose from 151,000,000 crowns in 1916 to 252,000,000 crowns in 1918, and sums loaned from 10,000,000 in 1915 to 21,000,000 in 1919, but in view of the devaluation of the crown a somewhat illusory prosperity only is shown by these figures. With the devaluation of the currency (in February 1916 a gold crown was exchanged for 1.51 paper crowns, and on 28 August 1922 for 17,000 paper crowns) these banks lost in the post-war period much of their capital. The investment of funds in the War Loan especially resulted in heavy loss, *viz.*, 336,000,000 crowns. So long as the inflation lasted, the Raiffeisen banks could hardly fulfil their function as banks of the rural population to any adequate extent. It was only as a result of the stabilisation of the currency in 1922 together with

the foundation of the National Bank of Austria with the exclusive right to issue bank notes (with a share capital of 30,000,000 crowns) and the duty of ensuring the stability of the currency, and also thanks to loans from the League of Nations that it became possible to introduce, into the co-operative societies also, gold balance sheets and in this way to restore their vitality.

As will be remembered, the League of Nations made to Austria on 4 October 1922 a loan of 650,000,000 crowns for twenty years intended for the consolidation of the budget in the years 1923 and 1924. With the re-establishment of order in the federal finances at the end of 1924, there remained a residual loan of nearly one third of the original loan. Austria approached the League with a request for the free gift of this sum for the carrying out certain economic investments, which was granted. A special importance attaches to the contributions from this loan employed for the development of the Raiffeisen banks, the successful activity of which depended to a decisive extent on the reliance of the whole of the rural population on the preservation of the purchasing power of the schilling. It proved practicable to re-establish the national currency, which had already fallen abroad to one third of the national value. The Austrian schilling after having depreciated by about 121 per cent. during the winter of 1931-32, has proved up to now to be one of the most stable currencies of the world.

In a number of decrees and ordinances of the Federal Ministry of Finance account was taken of the special and well justified wishes of the co-operative circles, as regarded the transformation of their balance sheets into gold values. The majority of the co-operative societies and federations established their gold balances on 1 January 1925, the others on 1 January 1926, a decree of the Federal Government having introduced the Austrian schilling as the obligatory currency as from 1 January 1926.

The development of the Raiffeisen banks appears from the following figures which characterise the main results.

Development of the Raiffeisen Banks during period 1924-1932.

Year	Number of Raiffeisen Banks	Total in savings deposits (1000 sch.)	% of the returns of the last prewar year on which returns were taken	Total of loans and credits on current account (1000 sch.)	% of the returns of the last prewar year for which returns were taken
End 1924	1,728	70,200	17.0	41,400	16.5
» 1925	1,687	118,100	26.6	75,500	30.2
» 1926	1,713	151,300	36.7	113,000	35.0
» 1927	1,718	197,300	47.8	157,600	63.0
» 1928	1,754	257,600	62.5	200,200	80.0
» 1929	1,772	305,800	74.2	243,500	97.4
» 1930	1,782	333,500	80.9	279,500	111.8
» 1931	1,792	318,700	77.3	289,100	115.6
» 1932	1,795	302,227	73.2	269,202	107.3

The number of the banks has increased from year to year, but the rate of increase has been relatively slow. It appears that the foundation of the banks has already reached something of a saturation point, but that they are so solidly constructed as to prove capable of withstanding liquidation in unfavourable years. Naturally the needs of the time have frequently contributed to bringing about co-operative association of the farmers.

As appears from this table, the savings deposits have perceptibly increased, from 17 per cent. only of the pre-war situation in 1924 they reached by 1930 nearly 81 per cent. of that level, although in 1932 they dropped again to 73.2 per cent., a fall in part due to the collapse in October 1931 of the *Kreditanstalt* and the somewhat shattered confidence of the depositors. At the same time the total of the loans at the end of 1930 already perceptibly exceeded the pre-war total and points to a higher indebtedness of the farmers with the Raiffeisen banks than before the war. The loans in fact in 1924 formed 16.5 per cent. of the pre-war total, and 107.3 per cent. in 1932, as compared with 115.6 per cent. in 1931.

The relation between the Raiffeisen banks and the number of political communes and the total of deposits and loans at the banks in the different Provinces of the Republic is shown as follows for 1 January 1933:

Provinces	Number of Raiffeisen banks	Number of political communes	Savings deposits and deposits on current account (1000 sch.)	% of the last pre-war year for which returns were taken	Total of loans and credits on current account (1000 sch.)	% of the last pre-war year for which returns were taken.
Burgenland	116	325	11,100	—	12,200	—
Carinthia	189	249	13,800	56.3	13,700	72.8
Lower Austria	577	1,720	87,300	72.5	75,500	132.2
Upper Austria	284	507	60,300	88.2	54,100	124.0
Salzburg	75	157	19,100	96.0	18,700	127.2
Styria	279	1,030	46,800	83.7	43,600	96.9
Tyrol	190	309	44,000	49.4	38,100	96.9
Vorarlberg	85	89	20,300	60.0	18,400	58.0
Total . . .	1,795	4,395	302,700	73.5	274,000	109.6

As appears from this table, the majority of the Raiffeisen banks are found in Lower Austria, where at the end of 1932 they numbered 577, or nearly one third of the total number. Next came Upper Austria and Styria with respectively 284 and 279 Raiffeisen banks; Tyrol and Carinthia with respectively 190 and 189; Burgenland with 116, Vorarlberg with 85 and Salzburg with 75. The ratio between the number of banks and that of the political communes is however most favourable in Vorarlberg, where nearly every commune has its own bank; it is most unfavourable (about 1 to 3) in Lower Austria where taking the absolute number the banks are most widely diffused, and also in Styria where the number of the existing banks is also fairly large, but the ratio is only 1 to 5. The number of banks is thus smaller than that of the

communes. Many banks extend their activity to several communes at the same time, in a sense contrary to the Raiffeisen principle, which is that of encouraging the limitation of the area of the bank operations.

The financial resources of these banks are most apparent in the four largest of the federal provinces, Lower Austria, Upper Austria, Styria and Tyrol, while Carinthia, which in territorial area and in number of banks occupies the fifth place, can claim only the seventh from the standpoint of the total of its deposits and loans. The reasons of the diversity of financial resources of the co-operative banks are naturally very varied. From the whole nexus of causes one element may here be disengaged, *viz.*, the differing agrarian structure in two federal provinces with about the same number of banks, Carinthia and Tyrol, and an endeavour will be made to place this element in relation with the total assets and liabilities in these two provinces.

	Carinthia	Tyrol
Number of farms	30.663	26.472
Less than 1 ha	3.240	2.131
1-2 "	2.730	2.655
2-5 "	5.154	6.856
5-10 "	4.491	5.625
10-10 "	5.671	4.172
20-50 "	6.360	3.159
10-100 "	1.859	934
100-200 "	732	384
200-500 "	277	282
500-1000 "	87	129
over 1000 ha	62	145

A comparison of the different size categories of the farms in the two provinces proves that, although Carinthia has a smaller agricultural area than the Tyrol, it has over 4,000 farms more than the latter, some 1,200 of this excess however being farms of under one hectare which are any way of less importance for agricultural co-operation. In the Tyrol on the other hand there are in the size classes going from 2 to 20 ha. about 1,400 farms more than there are in Carinthia in the same size categories. It is precisely these farms which, in virtue of their economic structure, have in the first place a decisive influence on the development of agricultural co-operation and to which it is also due that in Carinthia where the total number of farms is higher, none the less the economic resources of the Raiffeisen banks (deposits and loans) are lower than they are in the Tyrol.

In order to be able to examine thoroughly the question of the varying extents of the assets and liabilities of the Raiffeisen banks, it will be essential naturally, to take into account many other factors, cultural, economic and social. There is, it is clear, a very extensive sphere for investigations of the co-operative system which would have a certainly considerable scientific interest.

It is only the discovery of the manifold causes of this relation that can enable us to gain an insight into the real character of the effect of co-operation on agriculture.

With a view to bringing out more clearly the success achieved by the Raiffeisen banks, these banks may here be compared with similar credit institutions intended for the accumulation of small savings, *viz.*, the savings banks. The deposits in the Austrian savings banks amounted in 1932 to 1,064,000,000 schilling, of which 125,000,000 schilling were in post office savings banks. By April 1934 this amount had diminished to 1,044,000,000 schilling, the post office savings however having increased to 141,000,000 schilling. The savings deposits in the Raiffeisen banks, which amounted at the end of 1932 to over 302,000,000 schilling thus constitute only about one third of the savings bank deposits.

The following facts should however be borne in mind: the first savings banks in Austria were already founded at the beginning of the XIX century in the year 1819 at Vienna on the model of the Paris savings banks; that they were mainly established in the towns with a much more extended area of operations, and, that by the law of 1844, when there were still no Raiffeisen banks in existence, their deposits had gained the right of being considered as investments for trust moneys. The deposits of trust funds are in consequence guaranteed in law by the guarantee of the State or of self-governing bodies. The Raiffeisen banks although legally organised on well defined principles and exercising their bank operations on a basis of unlimited liability, have obtained only after many years' effort in 1933 the rank of trustee investments for their funds. By announcement of the Federal Ministry of Finance of 20 December 1933, trust moneys may from 1 January 1934 be invested in the Raiffeisen banks as an interest-bearing deposit within the limits prescribed for deposits in State savings banks. Notification of the Raiffeisen banks empowered to accept deposits of trustee funds is published by the Ministry of Finance. In the first instance 928 Raiffeisen banks were recognised for the purpose, including 564 in Lower Austria and 104 in Burgenland. This recognition confers on the farmers' co-operative credit banks a valuable right which assimilates them to the State savings banks.

Loans made by the Raiffeisen banks constitute as a rule, according to C. Schandl, one fourth of the total agricultural short term indebtendness in Austria, nearly as much as in Hungary and in Czechoslovakia.

In regard to the development of owned capital—shares in the business and reserve funds—and to the total turnover of the Austrian Raiffeisen banks partial statistics only are available as shown below.

The ratio existing between the owned and the borrowed capital at these banks cannot be regarded as favourable. While in Austria the law on co-operation has rendered obligatory the creation of shares, the tradition of the Raiffeisen banks is quite contrary to this. It is well known that Raiffeisen was entirely opposed to the accumulation of shares, and in this his view differed markedly from that of Schulze Delitzsch. To quote the words of Wygodzinski, " His moral convictions held in horror all that resembled profit-making. " The

*Amount of Owned and Borrowed Capital
and Ratio between the two types of Capital in 1932 (schilling)*

Provinces	Owned Capital		Total	Borrowed Capital	Ratio of owned to borrowed capital %
	Shares	Reserve Funds		Deposits on current account	
Burgenland	209,986.80 (1931)	557,445.83 (1931)	767,432.63	12,200,000	6.29 %
Carinthia	129,451.06	1,307,616.49	1,437,067.55	13,400,000	10.73 »
Lower Austria	192,355.94 (1929)	2,338,243.05 (1929)	2,530,598.99	75,500,000	3.35 »
Upper Austria	128,241.00	2,821,845.00	3,073,327.00	54,100,000	5.68 »
Salzburg	23,888.00	894,332.29	918,220.29	18,700,000	4.91 »
Styria	100,990.00 (1931)	2,645,102.74 (1931)	2,746,092.74	43,600,000	6.30 »
Tyrol	199,300.00	2,438,759.26	2,638,059.26	38,100,000	6.92 »
Vorarlberg	94,825.27	1,429,821.41	1,524,646.68	18,400,000	8.29 »

majority of the Raiffeisen banks have actually very few shares for subscription. It is true that even before the war in 1909 the ratio of the owned to the borrowed capital, expressed in percentage, was quite small.

	Owned Capital	Borrowed Capital
Lower Austria	3.1	96.9
Upper Austria	4.4	95.6
Salzburg	2.8	97.2
Styria	3.55	96.2
Carinthia	4.1	95.9
Tyrol and Vorarlberg	2.4	97.6

The policy in regard to interest in the Raiffeisen banks is evidently an important factor in increasing the deposits. The rate of interest on deposits was in 1931 on an average 6.42 per cent. and in 1932 was 5.88 per cent. The rates for loans were in the years in question 8.63 and 8.05 per cent. The disproportion between the interest on these credit transactions and the return from farming is thus quite perceptible; as early as 1930 the interest return on capital invested in agriculture was, according to the investigations of the Austrian provincial accountancy offices, only 1.4 per cent., and will most probably have dropped still lower at the present time.

On 1 July 1934 the following provisions were announced fixing the maximum rate of interest on the savings deposits in the Raiffeisen banks. The Raiffeisen banks and other co-operative credit societies subject to audit carried out by a recognised federation or by the Government of a province, may pay 4 per cent. interest for deposits, provided that their headquarters are situated in communes where there does not exist either a savings bank or bank such as a banking share company or a society with limited liability carrying on any form of banking business. Where on the other hand a savings bank or ordinary bank exists,

the Raiffeisen banks may pay an interest at $3\frac{7}{8}$ per cent. up to 31 December 1934 and from 1 January 1935 at the rate of $3\frac{3}{4}$ per cent. These rates are lowered by $\frac{1}{4}$ per cent. for Raiffeisen banks and other co-operative credit societies which are not subject to audit. With a view to preventing any exceeding of the rate of interest, a law has been enacted by the Ordinance of 17 March 1933 directed against exploitation of persons requiring credit, and, *inter alia*, provision has been made for the dissolution of credit societies that are guilty of having demanded too high a rate of interest.

The Raiffeisen banks, as already noted, administer a very considerable proportion of the national income, and their working has a profound influence on farming; they form in consequence an indispensable part of the organisation of credit in Austria. During the crisis a credit organisation firmly established on the basis of the Raiffeisen principles has a greater importance than ever, for it is only by means of a well organised credit that it will be possible to improve the situation of agriculture in an economic period during which the farming costs have greatly exceeded the prices of agricultural products.

M. TCHERKINSKY.

(*To be continued*).

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ACERBO Giacomo: *La economia dei cereali nell'Italia e nel mondo*. Milano, Hoepli, 1934-XIII, pp. IX + 1021.

[Among the problems constantly engaging the attention of students and of Governments in the present critical phase of agricultural economy the cereal problem occupies a chief place. This is due not merely to the fact that cereals constitute the primary basis of human existence and supply also an abundant share of the essential animal feeds, but also to the fact that the economy of a great number of farms is so to speak centred on cereals and that accordingly a large volume both of capital and of labour is involved. The importance will be at once recognised of this branch of farming under the technical, economic, social and political aspect, and also the necessity for studying it from these various standpoints. This necessity is more than ever felt at the present time when the various elements and factors of the process of production are more closely interrelated and interlocked, the one frequently operating as a function of the others. The new planned economy and the new commercial policy have modified the natural bases of production and of trade, introducing a system in which price formation is no longer subject to the free play of supply and demand, but to the action of a number of other factors, including even factors of an extra-economic order, with the result of bringing about a market situation extremely precarious and not easy to control. Hence a re-examination is indicated of the whole system of the cultivation and economy of cereals and its adaptation to the changed conditions.]

The work of Prof. Acerbo, Minister of Agriculture of the Kingdom of Italy during a period of more than five years amply supplies the data necessary for this purpose. It includes an introduction, "*Le caratteristiche generali dei cereali*" (pp. 1-36); a general section, "*I cereali nel mondo*" (pp. 37-334), and a special section, "*I cereali nell'Italia*" (pp. 335-1009). Four bibliographies are included,

containing particulars of fully 2400 publications. The two parts of the volume are divided into sections dealing respectively with historical data and with present day conditions of the economy of cereals. The writer analyses these conditions—for the separate countries—in their interrelations, bringing the story down through the different epochs from the most remote to the present day; he then discusses the general economic, botanical and biological characteristics of each cereal.

There is a very full treatment of the origin and propagation of the cereals in the various countries.

From the data on area, production, trade, consumption and prices a clear indication results of the zones of greatest intensity of cultivation, of highest technical progress, and of largest consumption, and accordingly a closer definition of the main currents of trade on which the commercial policy of the various countries is based. In this connection the author examines the measures adopted by the separate producing States, whether exporting or importing, in favour of cereal cultivation, showing that as at the present day the policy of the cereal trades has been extremely variable.

Of basic importance is the section relating to Italy, where the different crops are studied from the point of view of production, trade, consumption, prices, from pre-Roman times to the Imperial age, the mediaeval Roman-barbaric and the Italic, up to modern times.

A special chapter is devoted to forage crops, which have important correlations with the economy of cereal cultivation and an influence upon it.

The value of this remarkable work by Prot. Acerbo is, *inter alia*, that it gives a complete survey of this all important branch of agrarian economy and forms a guide for the study of the subject, making unnecessary the consultation, not always feasible, of numerous special works of every country].

G. C.

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MONTHLY BULLETIN

OF

AGRICULTURAL ECONOMICS AND SOCIOLOGY

THE IMPORTANCE OF FARM ACCOUNTANCY FOR THE STUDY OF CERTAIN ECONOMIC PROBLEMS IN AGRICULTURE

It is here proposed to give some examples of the contributions that may be made by the results of farm accountancy to the study of certain economic problems of agriculture. In the first place use will be made of figures that have been supplied by the Brougg Accountancy Office with a view to showing that the accountancy results make it possible to calculate the gross returns of a whole country as well as the quantities of agricultural products consumed annually by the country in question. *It is a fact of capital importance that exact information can be supplied only by means of farm accountancy.* Naturally the information so gained must be supported from other statistics, and complete studies can only be made when the agricultural census is an accomplished fact, or when less fragmentary price statistics are available.

There can be no doubt that *the results of farm accountancy make it possible to carry out a whole series of far-reaching studies. If these results are supplemented by the data supplied by an agricultural census – data relating to production and trade in agricultural products, head of cattle, etc. – it becomes possible to find the answer to any question to which the farm enterprise may give rise.*

As demonstrated in connection with the first table in this article, farm accountancy provides a means for making quantitative estimates for animal production, estimates which are not to be found in any other form of statistical return. The same holds good if it is desired to describe quantitatively the results of transformation of crop products on the farm.

The results of farm accountancy can be studied to greatest advantage by employing the *statistical method*, which eliminates the influence of the personal equation of the farmer. This is the only method which gives good results whenever the conditions which have given rise to the phenomena considered are not completely known.

This method shows clearly how far the data are in agreement or otherwise, what tendencies are manifested in the evolution of farming conditions, and provides a means of gauging their intensity. The method integrates, controls and adds precision to any conclusions that may be drawn and provides a sound foundation for the framework of any future developments.

Where certain groups of farms are not truly representative of their environment, *it is sufficient that they should be invariable from the statistical standpoint for them to be serviceable after the lapse of a sufficiently long period, since*

(Continued on page 46)

SWITZERLAND: YEAR

Designation	Gross Return 1000 gold francs		
	Assigned to the market	Consumed by household	Total
Horses	—	—	5,836
Cattle. (live weight)	266,304	3,540	269,844
Fat calves " "	48,044	648	48,692
Milk	459,171	81,601	540,772
Pigs (live weight)	102,716	37,046	139,762
Sheep	—	—	2,496
Goats	—	—	3,309
Poultry, etc.	—	—	15,336
Bee keeping	7,717	1,965	9,682
Total	883,952	124,800	1,035,729
Cereals	61,497	14,239	75,736
Potatoes	29,878	16,704	46,582
Vine production	43,023	5,611	48,634
Cider and fruits	112,236	35,691	147,927
Hay	—	—	12,661
Straw and litter	—	—	4,3228
Other products	—	—	34,402
Total	246,634	72,245	370,264
Forests	—	—	47,658
Other branches	—	—	189,862
Products	206,002	109,880	—
Total	1,336,588	306,925	1,643,513

(*) Live weight in metric quintals.

(1) Estimated according to the agricultural census and slaughtering returns.

SWITZERLAND: YEAR

Designation	Gross Return 1000 gold francs		
	Assigned to the market	Consumed by household	Total
Horses	—	—	2,968
Cattle (live weight)	165,991	3,952	169,943
Fat calves » »	37,681	900	38,581
Milk	438,976	77,169	516,145
Pigs (live weight)	90,098	32,661	122,759
Sheep	—	—	1,928
Goats	—	—	2,095
Poultry etc.	—	—	19,753
Bee keeping	4,655	1,449	6,104
Total . . .	737,401	116,131	880,276
Cereals	63,031	12,172	75,503
Potatoes	29,074	16,101	45,175
Vine products	42,697	7,016	49,713
Cider and fruits	78,377	31,392	109,769
Hay	—	—	13,859
Straw and litter	—	—	3,107
Other products	—	—	28,502
Total . . .	213,179	66,981	325,628
Forests	—	—	43,143
Other branches	—	—	208,757
Products	196,899	127,213	—
Total . . .	1,147,479	310,325	1,457,804

(*) Live weight in metric quintals.

(1) Estimated according to the agricultural census and slaughtering returns.

1932-33.

Unit of measure	Gross Yield 1000 units of measure			Harvested 1000 units of measure		Net imports 1000 units of measure	Consumption of Country 1000 units of measure
	Assigned to market	Consumed by house hold	Total	Transformed on farm	Total		
qm.	—	—	—	—	—	—	—
	1,360	33	1,393	—	1,626	+	1,672
			1,410		(1) 1,824	46	1,884
»	228	5	233	—	—	—	—
			314				
»	21,413	3,765	25,178	3,250	28,428	—	23,890
					(2) 27,868		
»	709	257	966	—	966	+	969
					920	3	923
head	—	—	36	—	—	—	—
			36		75	+	82
»	—	—	30	—	—	7	(*) 74
»	—	—	—	—	—	—	—
qm.	13	3	16	—	16	+	19
						3	14
qm.	2,019	399	2,418	—	2,418	+	13,379
					2,355	10,961	(3) 5,702
»	2,825	1,565	4,390	2,159	6,549	+	4,997
						607	4,022
»	421	69	490	—	490	+	1,837
						1,347	1,619
»	—	—	—	—	410	—	—
»	—	—	1,436	—	—	—	—
	—	—	—	—	—	—	—
	—	—	—	—	—	—	—
	—	—	—	—	—	—	—
	—	—	—	—	—	—	—
	—	—	—	—	—	—	—
	—	—	—	—	—	—	—
	—	—	—	—	—	—	—
	—	—	—	—	—	—	—

(2) Estimated according to the unit yield per cow.

(3) Breadstuff cereals only.

it will then become possible to discern the reasons which have brought about a variation in the results. In this case what is known as the *monographic method*, such, as is used, for example, at Oxford, may be employed.

The agricultural census data, when available, should serve as the basis for determining the extension and localisation of systems of farming, of the management of farms and of conditions of farm work, *thereby rendering practicable a comparative study of the agriculture of different countries and of the economic forces which determine the action of farmers* (1).

When the groups of farms are sufficiently homogeneous, the accountancy results give average values and thus the influence of a number of disturbing factors is eliminated. The results will show the influence of altitude and climate; of the proportion existing between crops; of the prevalence of animal over crop production and vice versa; of the situation of farms in relation to the market; of the size of farms, etc. The agricultural census should facilitate such a classification of farms, or render it possible to see whether the groups are representative of farming conditions in a given country or region or in a particular category of farms.

Production and price statistics supply valuable information for determining elasticity of demand for agricultural products as also the capacity of agriculture for adaptation to temporary or prolonged variations of the prices of the different products (Dragoni). It is however essential to have at hand results over a certain number of years.

In a word, when reinforced by data drawn from other sources, farm accountancy is the sole means by which an exact statement can be attained as to the economic situation of the farms of a region, of a single size category, and following similar farming systems. All that is necessary is to have the results of a certain number of years and of a number of farms which may be considered as representative of their actual environment. For example, the accountancy results of a certain number of farms of Australia and of the Argentine Republic would give us precise information on the position of sheep farming in Australia and of wheat growing in Argentina.

THE GROSS RETURN OF AGRICULTURE AND THE CALCULATION OF THE CONSUMPTION OF FARM PRODUCTS.

The gross return is here given of Swiss agriculture for 1931-32 and for 1932-33, in thousands of gold francs. The calculation has also been made by the Brougg Accountancy Office and we have been able to note that the results obtained by ourselves are very close to those obtained at Brougg (2).

(1) DRAGONI Dr. Carlo, *Economia Agraria*. Ulrico Hoepli, Milan 1932.

(2) In order to calculate the gross return of the whole of Swiss agriculture, we have multiplied the figures per hectare supplied to us from the Farm Accountancy Office by the areas of all farms included in the size categories into which the farms supervised by the Office are divided, and have taken the total. We are not aware what are the methods of calculation adopted by the Brougg Accountancy Office, but the results reached are almost identical, the difference being negligible.

In the next place the consumption of the farm household has been established, and the proportion of the produce assigned for marketing. It should be noted that in the gross return there is no item representing products transformed on the farm, for example, hay, since otherwise such an item would appear twice, once as hay, and in another place under the form of milk or meat.

Later, there are shown, in thousands of units of measure or quantity, the part of the gross yields apportioned to the market, the part consumed by the farm household, and the total gross yield. This calculation has been made possible by the prices. The quantities transformed on the farm have been calculated by deducting from the quantities harvested, taken from the Swiss Statistical Year Book, the quantities which have given the gross return, the imports have been added and the exports deducted, and thus there has been obtained, in quantities, the whole consumption of farm products in Switzerland. The figures of the last column are those of this consumption as calculated by ourselves; above, in italics, will be found the consumption figures calculated at Berne by another method. *Our figures and those in italics are nearly identical*; a difference appears as regards sheep and goats, owing to the fact that we have shown the quantities in carcasses and that the Swiss Office has shown them in live weight; a further difference will be noted in respect of cereals, as the Swiss Office only shows the breadstuff cereals and our figures include all cereals.

It seems superfluous to demonstrate the value of these figures on the international plane and to repeat that it is the accountancy results alone that make their presentation possible.

THE EARNING CAPACITY OF AGRICULTURE

Two examples have already been given of an enquiry which might be made on the profit capacity of each branch of agriculture of a country the accountancy results of which appear in *Farm Accountancy Statistics*. An endeavour may now be to compare certain countries among themselves; and, not to go further with the analysis, the variations in the net return may be followed in these countries from 1928-29 to 1930-31. To facilitate comparison a common measure may be chosen. We may reduce to 1 the net return obtained in 1928-29 in each of the countries under review and will then enquire what is the amount of the expenditure needed to obtain this franc of net return. When the net return diminishes, we shall enquire whether it is the farming costs that have increased or if it is the gross return which has decreased; or rather whether the gross return has decreased to a greater extent than the farming costs. We may establish the components of the gross return the variations of which have caused the variation in the return, and among the farming costs, the components which have varied.

On the following two pages will be found tables showing fluctuations of the net return, as well as of the gross return and the farming costs, in Switzerland, Denmark and Germany from 1928-29 to 1930-31.

To obtain one franc of net return, the Swiss farmer must spend 5.74 francs, the Danish farmer 4.50 fr, and the German 13.54 fr., in 1928-29. In Switzerland

Countries	Years	Gross return for one franc of net return in 1928-29							Net return (1)	Farming costs for one franc of net return in 1928-29						
		Stock breeding of slaughter cattle, etc.	Milk and milk products	Pigs	Cereals and root crops	Arboriculture and viticulture	Other branches	Total		Total	Labour	Fertilisers	Seeds and fodder	Taxes	Other expenses	Depreciations
SWITZERLAND . . .	1928-29	1.25	2.51	0.53	0.52	0.75	1.18	6.74	1 —	5.74	3.01	0.11	0.74	0.15	0.94	0.79
	1929-30	1.41	2.43	0.65	0.49	0.77	1.23	6.98	1.37	5.61	2.89	0.13	0.76	0.16	0.94	0.73
	1930-31	1.67	2.21	0.72	0.42	0.49	1.18	6.69	1.30	5.39	2.82	0.11	0.74	0.14	0.88	0.70
DENMARK	1928-29	0.44	2.06	2.10	0.34	—	0.56	5.50	1 —	4.50	1.68	0.19	1.80	0.17	0.66	—
	1929-30	0.46	1.97	2.10	0.17	—	0.59	5.29	0.87	4.42	1.70	0.21	1.68	0.16	0.67	—
	1930-31	0.38	1.66	1.42	0.13	—	0.53	4.12	0.07	4.05	1.59	0.20	1.43	0.17	0.66	—
GERMANY	1928-29	1.72	2.59	1.58	4.52	—	4.13	14.54	1 —	13.54	6.23	1.13	1.61	0.76	3.09	0.72
	1929-30	1.73	2.55	1.80	4.67	—	3.69	14.44	0.90	13.54	6.28	1.15	1.51	0.72	3.17	0.71
	1930-31	1.54	2.28	1.26	4.43	—	3.41	12.92	0.64	12.28	5.93	0.98	1.27	0.61	2.78	0.71

(1) The net return of 1928-29 has been taken as equal to 1.

Country	Year	Increase (+) or decrease (-) from 1928-29 to 1929-30 and from 1928-29 to 1930-31 of gross return for 1 franc of net return						Increase (+) or decrease (-) from 1928-29 to 1929-30 and from 1928-29 to 1930-31 of the farming costs for one franc of the net return				
		Stock far- ming for slaughter etc.	Milk and milk products	Pigs	Cereals and root crops	Other branches	Total	Labour costs	Purchases of fertiliser	Purchases of stock feeds	Other expenses	Depre- ciations
SWITZERLAND	1929-30	+ 0.16	- 0.08	+ 0.12	- 0.03	+ 0.07	+ 0.24	- 0.13	- 0.12	+ 0.02	+ 0.02	- 0.05
	1930-31	+ 0.42	- 0.30	+ 0.19	- 0.10	- 0.26	- 0.05	- 0.35	- 0.19	± 0.00	± 0.00	- 0.16
DENMARK	1929-30	+ 0.02	- 0.09	± 0.00	- 0.17	+ 0.03	- 0.21	- 0.08	+ 0.02	+ 0.02	- 0.12	± 0.00
	1930-31	- 0.06	- 0.40	- 0.68	- 0.21	- 0.03	- 1.38	- 0.45	- 0.09	+ 0.01	- 0.37	- 0.16
GERMANY	1929-30	+ 0.01	- 0.04	+ 0.22	+ 0.15	- 0.44	- 0.10	± 0.00	+ 0.05	+ 0.02	- 0.10	+ 0.03
	1930-31	- 0.18	- 0.31	- 0.32	- 0.09	- 0.72	- 1.62	- 1.26	- 0.30	- 0.15	- 0.34	- 0.47

Country	Year	Increase (+) or decrease (-) of volume and prices of agricultural products per 1 franc of net return									
		Beef		Milk		Pork		Wheat		Potatoes	
		kg.	Price	kg.	Price	kg.	Price	ql.	Price	ql.	Price
SWITZERLAND	1929-30	+ 14	+ 0.05	+ 11	- 0.01	+ 7	+ 0.15	- 0.40	+ 0.68	+ 32.80	+ 0.73
	1930-31	+ 31	+ 0.15	- 16	- 0.03	+ 6	+ 0.39	- 3.70	- 0.33	- 19.90	+ 0.37
	1929-30	- 28	+ 0.28	+ 30	- 0.01	+ 10	+ 0.26	- 0.60	- 2.83	- 21.40	- 2.17
DENMARK	1930-31	- 38	+ 0.19	+ 269	- 0.07	- 3	- 0.62	- 2.00	- 9.35	- 43.00	- 4.57
	1929-30	+ 5	+ 0.01	- 54	- 0.01	- 11	+ 0.08	+ 1.70	+ 4.03	- 3.50	+ 2.10
	1930-31	+ 2	- 0.11	- 93	± 0.00	- 10	- 0.47	- 2.40	+ 5.49	+ 23.00	+ 0.87

out of 5.74 fr. of farming costs, 3.01 fr. represent labour costs; in Denmark out of 4.50 fr. of farming costs, 1.68 fr. represents labour costs and 1.80 fr. represent expenditure on purchases of feed; and in Germany, out of 13.54 fr. of farming costs, 6.23 fr. represent labour costs and 3.09 fr. ordinary expenses. *It appears that the more the farm is engaged in live stock production, the less high are the farming costs.*

In 1928-29, out of 6.74 francs of gross return in Switzerland 2.51 fr. represent milk and 1.25 fr. represents increase in cattle; in Denmark out of 5.50 fr. of gross return, 2.10 fr. represent gross return on pig keeping and 2.06 fr. gross return on dairy production; in Germany it is the cereals and root crops which, for one franc of net return, have given the highest gross return (4.52 fr.), next come the other arable crops and finally milk (2.59 fr.).

In 1929-30, the net return shows an increase in Switzerland: for one franc of net return in 1928-29, the gross return increases by 0.24 fr. and the farming costs diminish by 0.13 fr., the labour costs alone diminishing by 0.12 fr. The increase in the gross return is due to the increase in production and prices of pork, and similar increases in respect of beef. The gross return of dairy products diminished because the price of milk had fallen.

In 1930-31, the net return was higher in Switzerland than in 1928-29 and less high than in 1929-30. From 1928-29 to 1930-31, the farming costs decrease by 0.35 fr. for one franc of net return in 1928-29; this decrease concerns the labour costs, repairs and depreciations and ordinary expenses. The gross return has decreased, but by 0.05 fr. only, per one franc of net return; and for this reason the net return remained higher than in 1928-29. This decline in the gross return is due to the decline in the gross return of dairy production, cereals, root crops and other crops. In Switzerland, a beginning was made in a larger production of beef; that of pork remained stationary, while later, prices firmed as well as those of beef.

The fluctuations in the production and prices of animal products require some explanation. The following statement was made in the article on farm accountancy which appeared in the *Monthly Bulletin of Agricultural Economics and Sociology* for September 1934, p. 369: "In 1928 the frontier was closed by the Federal Council; the following year prices rose by 7 per cent., and production increased by 13 per cent.; the gross return of this branch rose by 20 per cent. As there was an increasing demand for pigs, imports were increased without spoiling the sale of home bred pigs, as prices were still going up by 10 per cent. There is a great similarity between the cattle and the pig markets. The frontier was practically closed to imports in 1928 and completely so in 1929. This brought about a rise in prices and a resumption of imports in 1930, without affecting the gross return. It was due to the cattle breeding and pig fattening that, in spite of the fall in milk prices and in prices of crop products, the gross return showed but little fall in 1930-31."

In Denmark for 1 franc of net return the gross return drops in 1929-30 by 0.21 fr., the farming costs by 0.08 and the net return by 0.13 fr. as compared with 1928-29. The decrease in farming costs is due to the diminution of expenditure for feeds. The larger decrease in gross return is due especially to the fall in

production and prices of crop products; the production of pork and beef decreased in 1929-30 but the prices rose and the gross return remained nearly at the 1928-29 level. The dairy production increased,¹ but the prices fell, and the gross return of this branch was accordingly less.

In 1930-31, the net return fell almost to zero. The costs diminished by 0.45 fr. as compared with those of 1928-29, a diminution due almost entirely to decreased expenditure in purchases of stock feeds, a decrease of 0.37 franc. The gross return was less by 1.38 franc. It is the price decline, especially in pork and milk, which lowered the various gross returns which were components of the total gross return. The dairy production has even increased to a very large extent but the price fall has brought down the gross return on this branch also.

On p. 366 of the article previously quoted the following statement appears: "Denmark had been able to increase, from 1928-29 to 1930-31, the export of butter, and except in 1930-31 when the prices had fallen too low, the gross return from the dairy production was higher than in 1927-28. In 1928-29 pig prices rose, with the result that in 1929-30 the import of porkers was multiplied tenfold; this was an excessive importation and was followed by a slackening in the sales, and in 1930-31 there was a severe fall in market prices and accordingly in the gross return from pig farming."

In Germany, the net return in 1929-30 shows a slight diminution. The farming costs remain at the same level as in 1928-29. The gross return is diminished in the same proportion as the net return, and the return of the dairy production and that of the "various branches" also diminished.

In 1930-31 the net return shows a larger proportional diminution than in 1929-30 as compared in each case with 1928-29. The case is one of a marked decrease in farming costs and a still larger one in gross return. All components of the farming costs show a diminution, especially repairs, depreciations and ordinary expenses.

Along with the gross return there is a decrease in the return from dairy production, from pig breeding and of the item designated as "various branches." Milk prices remained the same as in 1928-29 but the production has greatly decreased. Pig prices show a very considerable drop.

It was noted in the article already quoted that in Germany there was a lower yield of dairy products. In 1928 Germany became an exporter of pigs, but in 1930 there was a decline in exports and prices were lower. Wheat prices increased in 1930, yields from root crops were very good, and the gross return improved.

The fluctuations are due to very various causes. On the one hand the farming costs must be considered, the height of which largely depend on that of the labour costs. On the other hand, the variations in gross return should be noted; apart from poor harvests (as for example in Latvia in 1928-29), the prices form the main factor on which depends the height or otherwise of the gross return. Speaking generally it is clear that production is conditioned by marketing facilities and according to the countries these are affected by restrictions on importation or maintenance of exportation at remunerative prices. In the first case when, as in Switzerland, the frontier is closed for certain products, market congestion is relieved and prices rise; when imports

are regulated in volume according to the requirements of the importing country, the effect on prices is also good. When importation is duty free, prices will fall if the prices ruling abroad are lower. It is clear that if the accountancy results are to be rightly studied, account must be taken of the governmental measures which appear in the forefront of "Farm Accountancy Statistics," and also of imports and exports, harvests and natural conditions.

All countries are attempting by various measures to safeguard their agriculture from the effects of the crisis; and when the accountancy results of a sufficient number of years are available, it may be possible to see which country will have been the most successful in so doing.

Some study may now be undertaken of these fluctuations in returns and in farming costs, and the causes may be investigated by the use of index-numbers.

In the following table are presented the results of six countries, the results of two of these having been already shown in the preceding tables. The figures are also examined by another method using index numbers, but it will be seen that the results reached are the same. The net return diminishes from 1928-29 to 1930-31, except in Switzerland. On the one hand a decrease in farming costs, except in Austria, is noted, and on the other hand a still more marked decrease in the gross return. Out of the variations in farming costs, it is the labour costs that exercise the greatest influence; they represent 50 to 60 per cent. of the farming costs. In Denmark they do not represent more than 37 to 40 per cent. of the farming costs, because in that country the purchases of stock feeds are the ruling factor. The employment of more or less labour per hectare makes no difference to the influence of the labour costs on the total farming costs. It will be seen from column 8 that the larger the farm the less labour is employed per unit of area.

From 1928-29 to 1930-31 the gross return diminishes. This decrease will be due to the decrease in return on stock farming, to that in the return on crop production, or to these two together. In Switzerland and in Austria, the gross return of the stock farming increased from 1928-29 to 1930-31, and the gross return from crop production diminished. In the other countries, Norway, Denmark, Finland and Estonia, it is seen that the gross return from stock farming and that from crop production alike diminish.

The causes of the decrease, or increase, in gross returns must be sought in the variations of the area reserved for crops, in the price fluctuations, and in the fluctuations in production.

The areas reserved for forage crops have remained the same in all the countries.

The prices of live stock products increased in 1929-30 in Austria, in Denmark and in Estonia; in 1930-31 they increased in Switzerland. On the other hand in Switzerland in 1929-30, in Denmark and in Estonia in 1930-31, in Norway and in Finland from 1928-29 to 1930-31 the live stock prices fell. As regards prices of crop products, from 1928-29 to 1930-31 there was everywhere a decline, with the sole exception of Switzerland.

Production is seen to increase in certain countries, and to diminish in others. Live stock production increases in Switzerland, in Austria and in Nor-

Country	Years	Average area of cultivated land in ha.	Gross return per 1 fr. of net return in 1928-29			Net return (net return of 1928-29 = 1)	Farming costs per 1 fr. of net return in 1928-29		Labour costs in % of farming costs	Man-days per ha.	Area reserved for artificially sown and natural grassland	Index-numbers of		Index-numbers of	
			Animal production	Crop production	Total		Total	Labour costs				prices of live stock	prices of crop products	animal production	crop production
SWITZERLAND	1928-29	12.59	4.49	2.25	6.74	1 —	5.74	3.01	52 —	73 —	10.42	100	100	100	100
	1929-30		4.68	2.30	6.98	1.37	5.61	2.89	51 —	70 —	10.52	99	102	104	102
	1930-31		4.82	1.87	6.69	1.30	5.39	2.82	52 —	67 —	10.35	101	101	107	83
AUSTRIA	1928-29	17.51	3.72	2.88	6.60	1 —	5.60	3.40	61 —	70 —	8.77	100	100	100	100
	1929-30		4.17	2.58	6.75	0.89	5.86	3.46	59 —	69 —	9.55	106	87	112	90
	1930-31		4.30	2.38	6.68	0.52	6.16	3.50	57 —	70 —	9.24	105	66	116	83
NORWAY	1928-29	16.75	5.92	2.98	8.90	1 —	7.90	3.70	47 —	66 —	10.72	100	100	100	100
	1929-30		5.80	2.40	8.20	1.02	7.18	3.39	47 —	64 —	10.29	94	64	98	81
	1930-31		5.60	2.07	7.67	0.61	7.06	3.27	46 —	64 —	10.87	89	60	95	70
DENMARK	1928-29	22.83	4.87	0.63	5.50	1 —	4.50	1.68	37 —	40 —	13.46	100	100	100	100
	1929-30		4.80	0.49	5.29	0.87	4.42	1.70	38 —	42 —	13.93	107	90	98	78
	1930-31		3.70	0.42	4.12	0.07	4.05	1.59	39 —	39 —	13.40	73	69	76	67
FINLAND	1928-29	22.29	6.15	2.28	8.43	1 —	7.43	4.23	57 —	42 —	13.83	100	100	100	100
	1929-30		5.60	2.03	7.72	0.83	6.89	3.97	58 —	37 —	13.59	92	82	92	89
	1930-31		4.61	1.97	6.58	0.79	5.79	3.41	59 —	48 —	13.67	76	68	75	86
ESTONIA	1928-29	36.83	7.21	5.50	12.71	1 —	11.71	7.26	62 —	27 —	24.74	100	100	100	100
	1929-30		7.36	5.17	12.53	0.84	11.69	7.19	62 —	27 —	23.65	114	80	102	94
	1930-31		5.98	4.65	10.63	0.57	10.06	6.28	62 —	26 —	23.79	94	55	83	85

way from 1928-29 to 1930-31. In Denmark it diminishes in 1929-30 but in 1930-31 it regains the level of 1928-29. In Estonia it diminishes from 1928-1929 to 1930-31, and in Finland it remains nearly stationary.

Crop production increases from 1928-29 to 1930-31 in Austria, Norway, Finland and Estonia; it diminishes, over the same years, in Switzerland and in Denmark.

One tendency emerges clearly: when prices decline while the cost of farming requisites do not fall, the farmers attempt to compensate the inadequacy of prices by an increase in yields. In Finland the prices of live stock products, which are the most important in this country, fall; but at the same time there is also a fall in the cost of farming requisites and the small farmer of Finland has not endeavoured to increase production. In fact the net return is but little reduced.

The height of prices and of production depend to a considerable extent on governmental measures and on the course of international trade in agricultural products. As regards Switzerland and Denmark, see statements already made.

In 1927 Austria imported 744,000 quintals of dairy products; in 1928 the country ceased to import and in 1930 became an exporter of dairy products. Importation of cattle has been progressively restricted, prices have strengthened and production has increased. The course of events on the market of crop products has been quite other. The market has not been protected and prices and return have fallen.

In Norway it proved necessary to reduce considerably, in 1930, the exports of fluid and condensed milk; prices declined and with prices also the returns. We have here the main cause of the decrease in Norway of the gross return of live stock production.

In Finland there was a steady increase in exports of butter from 1927 to 1930. Milk production which was at a maximum in 1928 has diminished slightly but the collapse of prices which has occurred has brought about the fall in the gross return. In 1930 the Government for the protection of agriculture definitely raised the import duties.

In Estonia, dairy production decreased slightly in 1930 with a noticeable decrease in prices of dairy products. The pig export showed some slackening in 1930.

The third section of this article which will appear in the March number of this Bulletin will form a study of the relative advantage of a branch of farming in countries where different types of farming prevail.

(To be continued)

JOSEPH DESLARZES.

STUDIES ON THE INTERNATIONAL MARKET FOR AGRICULTURAL PRODUCTS

I. — Costs and Prices: The Evolution of the Market for Commercial Fertilisers (*continued and concluded*).

V.

After the world war there were thus two markets for nitrogenous fertilisers, the North American with its dependence on cotton, and the European, especially the German, dependent on sugar beet.

The North American market is first considered here, as the statistical data which are needed for reviewing it extend over a period from 1918 to 1932 or a 15 year period.

Corresponding to an exceptionally high price for Middling cotton at New Orleans in 1918 — a price only exceeded in 1800 (1), 1815, 1817, in the period 1861 to 1866, in 1868 and in 1920 — there is also a correspondingly high price for nitrate of soda, although in this case no similar height is registered since 1880. For the years 1918-20 the average price of 100 kg. of Middling at New Orleans was 70.16 dollars, and that of 100 kg. of nitrogen in nitrate of soda 56 dollars. In other words to purchase 100 kg. of nitrogen in the form of nitrate of soda the American cotton-grower had to sell 0.80 quintals of cotton. In the same years the average price of ammonium sulphate in the United States was also exceptionally high. For 100 kg. of nitrogen in ammonium sulphate 63.82 dollars had to be paid, or in other words the American cotton grower had to sell 0.91 quintals of cotton to purchase these 100 kg. of nitrogen. Sulphate of ammonia was thus in 1918 in the United States in a somewhat more unfavourable position, quite apart from the difference between a fertiliser on an ammonia basis and one on a nitrate basis, a question which cannot be discussed here on account of its too great complexity.

Columns 4 and 5, where is found the exchange value between American Middling on the one hand and on the other nitrate of soda or sulphate of ammonia, show that this price relation from 1918-20, with 0.80 quintals of cotton against 100 kg. of nitrogen in nitrate of soda, improves up to 1922-24 and 1923-25, although with a set-back for the average of 1919-20, reaching 0.51 quintals cotton against 100 kg. of nitrogen in nitrate of soda. In 1930-32 on the other hand 100 kg. of nitrogen in nitrate of soda were worth 1.30 quintals cotton.

Over the same period however the exchange value of cotton as compared with ammonium sulphate improved, 100 kg. of nitrogen content in sulphate of ammonia being purchasable in 1918-20 by 0.91 quintal cotton and in 1923-1925 by 0.54 quintal cotton; in 1930-32 the exchange value of cotton fell somewhat but became 0.79 quintal only in comparison. It may now be asked: what was the effect of these variations on the consumption tendencies of nitrate of soda and ammonium sulphate in the United States of America?

(1) Prices before 1918 are given in accordance with the *Deutsches Baumwollhandbuch*, Bremen.

TABLE V. — *The North American Market for Nitrogenous Fertilisers in relation to Cotton Prices.*

	1	2	3	4	5	6	7
Moving 3 years averages	American Middling cotton prices, New Orleans Dollars per 100 kg.	Chile nitrate of soda N. Y. prices Dollars per 100 kg. nitrogen	Sulphate of ammonia New York prices Dollars per 100 kg. nitrogen	Exchange value Amer. Middling cotton with nitrogen in nitrate of soda quintals cotton for 100 kg.	Exchange value Amer. Middling cotton with sulphate of ammonia New York quintals cotton for 100 kg.	U. S. A. consumption of soda (in fertiliser) million quintals	U. S. A. consumption of sulphate of ammonia (in fertiliser) million quintals
1918-20	70.16	56.00	63.82	0.80	0.91	11.81	3.73
1919-21	57.90	45.40	48.31	0.78	0.83	6.88	3.20
1920-22	49.59	38.19	41.76	0.77	0.84	7.34	3.16
1921-23	46.57	31.03	30.91	0.67	0.66	5.95	3.16
1922-24	56.70	28.84	32.16	0.51	0.57	8.16	3.75
1923-25	58.58	36.03	31.45	0.51	0.54	10.13	4.33
1924-26	50.48	30.41	29.69	0.60	0.59	10.31	4.45
1925-27	42.62	32.60	28.65	0.76	0.67	9.40	4.78
1926-28	40.00	32.69	27.14	0.82	0.68	9.13	4.87
1927-29	40.59	32.65	25.53	0.80	0.63	9.08	5.41
1928-30	37.59	30.60	23.92	0.81	0.64	8.35	5.71
1929-31	29.44	29.46	20.28	1.00	0.69	6.62	5.60
1930-32	20.44	26.67	16.16	1.30	0.79	3.74	5.42

In the first place, a decline in the consumption of nitrate of soda may be noted, from an average of 11,810,000 quintals in 1918-20 to one of 5,950,000 in 1921-23, which, as column 6 of Table V shows, appears to be solely due to the price fall in cotton prices. These in the same period fell from 70.16 dollars per quintal to 46.57 dollars. The consumption of nitrate of soda is seen further to follow the movements of the cotton prices, that is to say, to increase and then to fall sharply in accordance with the price fall in cotton. The price of cotton amounted to only little more than 20.44 dollars per quintal for 1930-32 as compared with 50.48 dollars per quintal in 1924-26, and similarly the consumption of nitrate of soda amounted in 1930-32 to an average of only 3,740,000 quintals as compared with 10,310,000 quintals for 1924-26.

On the other hand the consumption of ammonium sulphate in the same period rose from 4,450,000 quintals as the average for 1924-26 to 5,420,000 quintals for 1930-32. This fact is to be explained by the variations in the exchange value of cotton and nitrate of soda on the one hand and cotton and ammonium sulphate on the other. The divergence in the course of these two fertilisers, which has put nitrate of soda at a disadvantage as compared with ammonium sulphate, has naturally led to the marked fall in the consumption of nitrate of soda and the rise in that of ammonium sulphate, although the latter cannot in any way compensate for the falling off noted above in the nitrate of soda consumption. In 1932 only 490,000 quintals of nitrate of soda were consumed in the United States, in other words the consumption has become practically of no importance.

This change in the market situation seems to due merely to the changes in the price relations, for the area under cotton in the United States does not in these years essentially vary in accordance with the variations in the consumption of nitrate of soda, as appears from a comparison of the items in column 2 of Table II with those of column 6 of Table V.

The unfavourable development of the price relations between cotton and nitrate of soda in connection with the development of the price relations between cotton and sulphate of ammonia results thus in the consumption of nitrate of soda on the nitrates market of the United States becoming of no practical importance, while the consumption of sulphate of ammonia increases but to a much less extent, so that the total consumption in nitrogenous fertilisers of the United States has very considerably declined. The total in nitrate of soda and sulphate of ammonia taken together amounts in 1930-32 to 9,160,000 quintals as compared with 15,540,000 in 1918-20.

In 1932 the consumption in nitrate of soda in the United States amounted only to 490,000 quintals, and was thus practically of no importance, while other synthetic nitrogenous fertilisers play no special part. Hence it may be assumed that in 1932 in the United States, so far as there was utilisation of nitrogenous fertilisers, it was in the form of sulphate of ammonia (1).

(1) The total output of nitrate of soda in 1932 was not more than 6,910,000 quintals, while in 1929 the consumption in the United States was still 9,130,000 quintals. In France, in 1932, the consumption was 3,100,000 quintals, an insignificant figure compared with the earlier world consumption.

The decrease in the consumption of nitrate of soda did not result in any larger utilisation of sulphate of ammonia, for the reason in the first place that in the United States this latter is mainly a by-product of the gas and coke factories. These cannot increase their output at will, especially when the greater proportion of the coal is "coked" in coke ovens equipped with a by-product recovery plant. It was for this reason that during the war in Germany it became necessary to obtain synthetically the required additional production of sulphate of ammonia, or nitrogen compounds, and in this way the great transformation of the world market came about.

The same results are evident if the aggregate sales of artificial fertilisers are considered in the nine principal cotton growing States of North America: North Carolina, South Carolina, Georgia, Alabama, Mississippi, Tennessee, Louisiana, Arkansas, Texas. The sales of commercial fertilisers in these States in the years 1927-32 were as follows (taken from the Cotton Year Book of the New York Cotton Exchange):

	in 1000 short tons
1927	3,643
1928	4,633
1929	4,582
1930	4,612
1931	3,254
1932	1,963

It will be seen that the variations in sales of chemical fertilisers in these cotton growing States of North America are very similar to those shown for nitrate of soda and sulphate of ammonia alone.

How far the costs of fertilisers influence the production costs of cotton is shown by the following figures taken from a work by W. H. Johnson entitled "Cotton and its Production", which is based on 842 separate reports made for the year 1918:

State and county	Production costs per acre (dollars)	Manuring expenditure per acre (dollars)	In % of costs of production
Georgia:			
Lauras County	5.40	3.85	71
Greene	6.46	4.17	65
Sumter	7.63	4.92	64
Alabama:			
Tallapoona	5.17	3.07	59
Marshall	10.30	6.43	62
Dale	5.88	3.54	60
South Carolina:			
Anderson	8.21	5.93	72
Barnwell	13.41	11.24	84
Texas:			
Ellis	1.20	—	—
Rusk	3.52	2.11	60

The high proportion of the production costs of cotton represented by the expenditure on fertilisers — highest in the Eastern States — is further proof of the dependence of the prices, or consumption, of fertilisers on cotton prices, or on the area under cotton. It is of interest to note that, according to W. H. Johnson, cotton seed is used in some States as a direct fertiliser. Such quantities of cotton seed are not very large in themselves and cannot be expressed in figures owing to the absence of specific statistics, but are included in the above statistics as to the consumption of fertilisers for the cotton of the nine principal cotton growing states of the United States.

The statistical data in regard to the German market in nitrogenous fertilisers are comparable only from 1924 onwards, after the inflation period. In the ten years up to 1932 the conditions have been similar to those in the United States. But some important differences are to be noted due to the fact that in 1924 the market was already governed by the volume of the sulphate of ammonia and the synthetic nitrates whereas nitrate of soda took a quite subordinate place. In 1924 the consumption of nitrogenous substances for agriculture in Germany was as follows:

	Quintals	%
Sulphate of ammonia	8,800,000	64.75
Nitrate of soda	50,000	0.37
Calcium cyanamide	2,120,000	15.60
Other forms of synthetic nitrogen compounds	2,620,000	19.28
	<u>13,590,000</u>	<u>100.00</u>

There is a decided contrast between the position in the United States where by 1932 nitrate of soda had almost disappeared from the market, and was not replaced by other nitrogenous fertilisers, and in particular not by the synthetic nitrates, and that of the consumption in German agriculture which for 1930-32 was 17,710,000 quintals of nitrogenous substances or 2,970,000 quintals higher than that for 1924-26, *viz.*, 14,740,000 quintals. This expansion is mainly owing to the introduction of the synthetic nitrogenous fertilisers, the consumption of which showed an increase of 3,450,000 quintals for 1924-26 to 8,160,000 quintals for 1930-32. The consumption of lime nitrogen also increased while that of sulphate of ammonia had declined from 8,370,000 quintals for 1924-26 to 4,710,000 quintals for 1930-32.

The consumption of nitrate of soda does actually show an increase proportionately large, from 150,000 quintals for 1924-26 to 750,000 quintals in 1930-32, but in comparison with the total consumption in nitrogenous fertilisers it may be said to be unimportant. From 1924 onwards, the German consumption of nitrogen reached its highest point in the average for 1928-30, *viz.*, 19,910,000 quintals; up to 1930-32 there was no great falling off, and from 1931, with 15,970,000 quintals, to 1932 with 17,450,000 quintals there was again a slight recovery. The consumption in synthetic nitrate fertilisers shows from 1924-26 to 1930-32 a

TABLE VI. — *The German Market for Nitrogenous Fertilisers in relation to Sugar Prices.*

	1	2	3	4	5
Moving 3 years averages	Raw sugar prices Magdeburg R.M. per 100 kg.	Sulphate of ammonia prices for 100 kg. nitrogen in R.M.	Ammonium saltpetre (Leuna saltpetre) prices for 100 kg. nitrogen in R.M.	Chile nitrate of soda prices for 100 kg. nitrogen in R.M.	Exchange value of raw sugar Magdeburg with sulphate of ammonia quintals sugar for 100 kg. nitrogen
1924-26	39.41	105.52	105.52	148.99	2.68
1925-27	39.14	99.83	99.83	150.56	2.55
1926-28	40.19	95.01	95.01	142.53	2.36
1927-29	41.62	91.38	91.88	134.79	2.19
1928-30	40.55	87.91	89.95	—	2.17
1929-31	40.82	84.05	87.75	—	2.06
1930-32	41.29	78.45	84.02	—	1.90
1931-33	41.34	74.01	80.28	114.17	1.79

	6	7	8	9	10
Moving 3 years averages	Exchange value of raw sugar Magdeburg with ammonium saltpetre (Leuna saltpetre) quintals of sugar for 100 kg. nitrogen	Exchange value of raw sugar Magdeburg with Chile nitrate of soda quintals of sugar for 100 kg. nitrogen	Consumption of sulphate of ammonia million quintals	Consumption of Leuna saltpetre (1) million quintals	Consumption of Chile nitrate of soda million quintals
1924-26	2.68	3.78	8.37	3.45	0.15
1925-27	2.55	3.85	8.28	4.59	0.21
1926-28	2.36	3.55	7.98	5.91	0.42
1927-29	2.21	3.24	7.52	7.17	0.68
1928-30	2.22	—	6.46	8.26	0.96
1929-31	2.15	—	5.27	8.64	0.92
1930-32	2.03	—	4.71	8.49	0.75
1931-33	1.94	2.76	—	—	—

(1) Including other nitrates and "nitrophoska."

large increase of 3,450,000 quintals to 8,490,000 quintals, with however a decline from 1930 to 1932 from 8,130,000 quintals to 8,030,000 quintals.

The marked increase in consumption of the nitrogenous fertilisers as a whole from 1924-26 to 1930-32 was largely due to the favourable movement of the exchange value of beet sugar, that all important product for the German nitrogenous fertiliser market, as compared with these fertilisers. The price relation between these and beet sugar greatly improved, and in fact nearly in equal measure for each of the important nitrogenous fertilisers. To purchase 100 kg. of nitrogen content of sulphate, of ammonia, etc., the following quantities of beet

sugar (melis sugar on the Magdeburg market) were required in the years under review:

	Sulphate of ammonia	Leuna saltpetre	Nitrate of soda
in 1924-26	2.69	2.69	3.48
» 1930-32	1.90	2.03	3.23 (1927-29)

The decrease in consumption from 1930 to 1932 is not however based on any successive unfavourable price relation between beet sugar and nitrogen, nor is the recovery from 1931 to 1932 so based, since for the purchase of 100 kg. of nitrogen content the following quantities in quintals of beet sugar were required:

	Sulphate of ammonia	Leuna saltpetre	Nitrate of soda
in 1930.	2.05	2.16	3.08 (in 1929)
» 1931.	1.90	2.04	2.90
» 1932.	1.76	1.90	2.71

The exchange value between beet sugar and nitrogen improved in favour of sugar in Germany from 1930, and equally in respect of all the nitrogenous fertilisers. On the other hand a decrease in the consumption of nitrogenous manures took place, due to a reduction in the area under sugar beet. The large increase in the consumption of nitrogenous manures from 1924-26 to 1930-1932 followed the parallel increase in the area under sugar beet, which from 400,100 hectares in 1924-26 increased to 464,270 hectares in 1928-30; while the decrease from 1930 to 1932 of the area under sugar beet was accompanied by a decrease in nitrogen consumption. This area diminished from 483,000 hectares in 1930 to 270,800 hectares in 1932, a 43.93 per cent. decrease, while the decrease in the volume of nitrogenous manures sold on the German market is from 19,700,000 quintals in 1930 to 17,450,000 in 1932, or just over a ten per cent. decrease. The reason of this may be that, in spite of the indisputable interdependence that exists between the area under sugar beet and the consumption of nitrogenous manures, in the case of a very marked diminution in the area under sugar beet, as occurred from 1930 to 1932, the effect was less perceptible owing to the unchanged position of the other crops which require such fertilisers. On the other hand, it will be seen that the areas under wheat in Germany in the period from 1924 to 1932 continued to increase, but it may also be noted that this ascending course is sometimes opposed to the consumption of nitrogenous manures, as in the years 1928, 1929 and 1930, when the area under wheat in Germany in 1929 is lower than in 1928, or 1,600,000 ha. as compared with 1,728,000 ha., while in 1930 it was 1,781,000 ha. In those same years the consumption of nitrogenous fertiliser follows an exactly contrary course; the amount being 19,850,000 in 1928, 20,170,000 in 1929 and 19,700,000 quintals in 1930. Also from 1930 to 1932 the wheat areas showed continuous increase, viz., from 1,781,000 ha. in 1930 to 2,167,000 ha. in 1931 and 2,280,000 ha. in 1932, while the consumption of nitrogenous manures in the same years declined from

19,700,000 quintals in 1930 to 15,970,000 in 1931 and 17,450,000 in 1932. This cannot be explained from the price relation of wheat to nitrogen, which, while improving considerably from 1924 to 1932, does not seem to have exercised any great influence during the decisive years on the consumption of nitrogenous manures. Thus the exchange value between wheat and nitrogen becomes less favourable from 1928 to 1929, while, as already noted, the consumption of nitrogenous manures increased during that period to a marked extent.

TABLE VII. — *Value of 100 kg. of Nitrogen Content in Germany in Quintals of Wheat.*

Year	Nitrate of soda	Sulphate of ammonia	Leuna saltpetre	Cyanamide of calcium
1924	7.95	6.00	6.00	5.60
1925	6.23	4.35	4.35	3.94
1926	5.53	3.73	3.73	2.40
1927	5.68	3.51	3.51	3.23
1928	5.31	3.77	3.77	3.50
1929	5.26	3.78	3.84	3.56
1930	—	3.18	3.36	3.07
1931	4.70	3.07	3.31	3.04
1932	4.85	3.15	3.41	3.14
1933	5.83	3.74	4.09	3.82

Although in our opinion the two most important world markets governing prices of nitrogenous manures since the war are those of the United States and Germany, some attempt will be made here briefly to discuss the course of events in Great Britain.

As shown in Table VIII, the course of the British market very closely follows that of the North American market, although there is this fundamental difference, *viz.*, that the British nitrogen market is influenced by the prices of beet sugar and not by those of cotton. The price relations for refined sugar and for nitrate of soda on the one hand and sulphate of ammonia on the other hand are calculated. Since however the German sugar prices are the prices ruling on the Magdeburg market for raw sugar, they are not strictly comparable with the prices of sugar in Great Britain, but their general course can be compared.

It will be seen that the exchange value between sugar and the nitrogen content of nitrate of soda (column 4) in Great Britain, became from 1924-26 onwards very unfavourable; on the other hand that between sugar and sulphate of ammonia (column 5) was more favourable, although with fluctuations. There is a specially marked divergence in the curves relating to the exchange value of the two fertilisers from 1929-31 onwards, while the exchange value of sugar with nitrate of soda remains almost unaltered. The result was a sharp decline in the consumption of the nitrate in Great Britain, but no increase in that of sulphate of ammonia. The area under sugar beet diminished from 141,200 ha. in 1930 to 94,800 ha.

TABLE VIII. — *The British Market for Nitrogenous Fertilisers
in relation to Sugar Prices.*

Moving 3 years averages	1 Prices of refined sugar in London sh. per quintal	2 Prices of nitrate of soda in Liverpool sh. per 100 kg. nitrogen	3 Prices of sulphate of ammonia in London (- neutral) sh. per 100 kg. nitrogen	4 Exchange value sugar with nitrate of soda Liverpool quintals sugar per 100 kg. nitrogen		5 Exchange value sugar with sulphate of ammonia London	6 Consumption of nitrate of soda in fertiliser million quintals	7 Consumption of sulphate of ammonia million quintals
1921-23	110.51	196.65	157.36	1.78	1.42	0.53	1.32	
1922-24	101.98	174.86	144.42	1.71	1.42	0.60	1.34	
1923-25	89.68	168.49	133.96	1.88	1.49	0.75	1.25	
1924-26	70.70	168.06	127.10	2.38	1.80	0.64	1.35	
1925-27	60.47	164.36	118.31	2.72	1.96	0.65	1.38	
1926-28	58.17	154.23	110.41	2.65	1.90	0.63	1.43	
1927-29	53.80	141.89	101.92	2.64	1.89	0.76	1.51	
1928-30	47.10	129.48	96.66	2.75	2.05	0.65	1.49	
1929-31	42.53	124.93	89.27	2.94	2.10	0.66	1.41	
1930-32	40.02	119.03	76.49	2.97	1.91	0.43	1.40	

in 1931 to expand again to 103,500 in 1932. As happened in the United States, so in Great Britain the nitrate of soda almost disappeared from use and was not replaced in the same proportion by other nitrogenous fertilisers; the consumption of sulphate of ammonia from 1,240,000 quintals in 1931 became 1,610,000 in 1932, an increase of 370,000 quintals, while that of nitrate of soda fell from 770,000 in 1931 to 80,000 only in 1932, or a decline of 690,000 quintals. So too, as in the United States, the synthetic nitrates take no important place; in fact these products have never had special importance on the British market.

To summarise the results of this section: in the first place after the war nitrate of soda completely lost the great importance which it formerly had on the world market; secondly, the extraordinary decline in the consumption in the United States has resulted in the disappearance of this great market which used formerly to fix the prices of this fertiliser.

On the other hand, Germany, which up to the declaration of war used equally with the United States to exercise an influence on the world market in nitrogenous substances, had gained by 1932 a much greater influence as the result of the almost complete decline in consumption in the United States and the marked increase of German consumption. Similar movements have been noted on the British market, but no decisive influence can be attributed to these. Finally it cannot be shown that wheat has exercised any influence on this market.

Before the war cotton and beet sugar influenced the nitrate of soda market and thereby the world market in nitrogenous substances and this situation prevailed up to 1930. By 1932, however, in consequence of the nearly complete disappearance of nitrate of soda from the nitrogen consumption of the United States, the influence of cotton on the world market in nitrogenous substances had so far declined that by that date this market, more particularly in the synthetic nitrates, was influenced by beet sugar exclusively. The synthetic compounds of nitrogen are replacing the nitrate of soda, which is a natural product; nitrogen obtained as a by-product from the factories is also losing its importance. Speaking generally, the cultivation of sugar beet is now the most decisive influencing factor, together with, on the other side, the production of synthetic nitrates, especially in present day Germany.

VI.

In this section a study will be made of the conditions which in the last few years, from 1928-29 to 1933-34, have affected the principal commercial fertilisers of the three groups: nitrogenous, phosphoric and potassic. As a beginning this enquiry has to be limited to nine countries: Germany, Denmark, France, Great Britain, Italy, Netherlands, Poland, Sweden and Czechoslovakia. These nine countries may be regarded as representative consumers of fertilisers. If the aggregate consumption in commercial fertilisers in these countries is compared with the world production, it will be seen that in 1928 their consumption was 53 per cent. and in 1932 it was 58 per cent. of the world production of commercial fertilisers, not including raw phosphates. The following is the consumption

of these nine countries for the years 1928 to 1932 in commercial fertilisers taken together, exclusive of raw phosphates.

Countries	1928	1929	1930	1931	1932
	in million quintals				
Germany	61.50	61.25	60.98	50.79	49.42
Denmark	5.78	8.01	8.13	5.11	4.68
France	38.56	42.15	34.26	32.20	29.99
Great Britain and Northern Ireland . .	11.37	13.01	10.30	9.96	8.50
Italy	17.14	20.02	16.87	12.27	14.14
Netherlands	14.78	15.26	13.09	10.37	7.63
Poland	12.16	12.97	7.81	4.86	4.03
Sweden	4.03	4.04	4.27	3.50	2.97
Czechoslovakia	6.14	6.43	4.39	4.10	3.55
Total	171.46	183.14	160.10	133.16	124.91

The results of the comparison from the international standpoint of these important consumers of commercial fertilisers will now be examined.

The comparison is based on the exchange value of the products as compared with the means of production. As products are here chosen the arable crops, wheat and oats, for which statistical comparison is possible. Unfortunately, owing to the absence of comparable data as to prices, beet sugar, the influence of which has been noted in detail on the market for commercial, and in particular for nitrogenous fertilisers, cannot at present be included in a far-reaching international comparison.

Among the arable crop products wheat and oats have been selected, primarily because partial treatment of this wide sphere alone is possible here and the enquiry must needs be limited to the most important and most representative products, in the second place because, next to sugar beet, wheat and oats are the crops most avid of the nutritive substances available in the soil. This appears clearly from the following figures, which express in kilogrammes per hectare the quantities of nutrient substances removed from the soil by an average crop (after Krische: *Agrikulturchemie*).

	Nitrogen	Potassium	Phosphoric acid
	kilogrammes per hectare		
Wheat	85	40	30
Sugarbeet	75	50	35
Oats	65	70	20
Rye	65	50	25
Barley	60	35	20

Wheat is of especial importance, partly as a main breadstuff crop, but also because, apart from its actual requirements in nutrients shown above, it only gives good yields when an excess of nutritive substances available in the soil.

Oats respond to nitrogen but more to potassium. The requirements of rye and especially of barley are smaller. Maize occupies an intermediate place between sugar beet and oats in this respect, but the actual figures are not shown for reasons of space.

The limits of this article unfortunately do not make it possible so to reproduce in detail the changes in the exchange value of the two cereals as compared with the fertilisers as to give the development in the separate years. For this reason only the two years 1928-29 and 1933-34 are here compared. This selection, however, from the general trend of such events during the period provides evidence of very interesting changes in the situation of the different cereal producing countries and of their position with respect to each other.

The following Table IX shows the situation for the wheat producers of the different countries in 1928-29 and 1933-34, *i.e.*, it indicates the number of quintals of wheat the grower in the different countries had to offer for the purchase of 100 kg. of the specific nutritive element of any one fertiliser in the two years compared. The items are arranged in the series according to the international position of the production lands, and in each case from the country where conditions are most favourable to that where they are least so; accordingly an impression of the general situation may be easily gained.

TABLE IX. — *The Exchange Value of Wheat with the Fertilisers in 1928-29 and 1933-34 (1).*

The wheat grower in the countries in order to purchase 100 kg. of phosphoric acid (P_2O_5) contained in basic slag had to sell quantities of wheat as follows (in quintals): —

1928-29		1933-34	
1. — France	0.86	1. — Netherlands	0.91
2. — Italy	1.11	2. — France	1.01
3. — Czechoslovakia	1.34	3. — Germany	1.37
4. — Germany	1.38	4. — Czechoslovakia	1.58
5. — Netherlands	1.43	5. — Great Britain	3.12
6. — Great Britain	1.61	6. — Italy (no quotation for basic slag).	

Number of quintals of Wheat required to purchase 100 kg. of phosphoric acid contained in Superphosphate.

1928-29		1933-34	
1. — Italy	0.99	1. — Netherlands	0.86
2. — France	1.34	2. — France	1.57
3. — Germany	1.57	3. — Italy	1.67
4. — Netherlands	1.70	4. — Germany	1.70
5. — Poland	1.82	5. — Czechoslovakia	1.96
6. — Czechoslovakia	1.82	6. — Sweden	2.22
7. — Great Britain	1.97	7. — Poland	2.81
8. — Denmark	1.99	8. — Denmark	2.92
9. — Sweden	2.07	9. — Great Britain	3.56

(1) For nitrate of soda, 1932-33.

Exchange Value of Wheat (in quintals) for Potash (K_2O).

1928-29		1933-34	
1. — France.	0.59	1. — Netherlands	0.69
2. — Germany	0.70	2. — France.	0.73
3. — Czechoslovakia	0.88	3. — Germany	0.90
4. — Poland	0.94	4. — Czechoslovakia	0.94
5. — Italy	1.27	5. — Italy	1.58
6. — Netherlands	1.41	6. — Poland	2.00
7. — Great Britain.	2.14	7. — Sweden	2.16
8. — Denmark.	2.17	8. — Denmark.	2.86
9. — Sweden	2.25	9. — Great Britain.	4.44

*Number of quintals of Wheat for 100 kg. Nitrogen
in Sulphate of Ammonia.*

1928-29		1933-34	
1. — Poland	2.58	1. — Netherlands.	1.75
2. — Italy	3.54	2. — France.	3.55
3. — France.	3.86	3. — Germany	3.64
4. — Czechoslovakia.	4.17	4. — Czechoslovakia	4.07
5. — Germany.	4.22	5. — Italy.	4.45
6. — Great Britain	5.07	6. — Poland	5.29
7. — Netherlands	5.12	7. — Denmark.	6.24
8. — Denmark	5.86	8. — Great Britain.	6.92

*Number of quintals of Wheat required for 100 kg. Nitrogen
from nitrate of soda (in Germany Leuna salipetre).*

1928-29		1932-33	
1. — Germany.	4.22	1. — Netherlands	3.41
2. — France.	4.85	2. — Germany.	3.91
3. — Czechoslovakia	6.02	3. — France.	4.97
4. — Great Britain	6.74	4. — Czechoslovakia	6.15
5. — Netherlands	7.14	5. — Sweden	7.00
6. — Sweden	7.71	6. — Great Britain.	9.97

Summarising it may be said that the most striking instance in respect to the exchange value of wheat with the commercial fertilisers occurs in the Netherlands where an extraordinarily favourable development is witnessed. The reason must be found in the intervention of the Netherlands Government on the wheat market; in 1933-34 the grower in the Netherlands received for his wheat a price of 13.13 fl. per quintal as compared with 10.50 fl. per quintal in 1928-29.

Fertiliser prices however even in the Netherlands have followed the general price decline, and this coincidence of high wheat prices with reduced fertiliser prices has brought about the favourable exchange value of with fertilisers in 1933-34.

In the other countries the conditions have only slightly improved, or are barely maintained, or have somewhat worsened. The most striking instances are the declines for fertilisers in general in Great Britain and Denmark, and for sulphate of ammonia in Poland.

To establish an international comparable monetary unit basis, we have transformed into gold francs (Swiss francs) the differences expressed in weight of the exchange value resulting from the comparison of each of the countries taken into consideration with Germany, using the corresponding wheat prices and the respective rates of exchange.

In Table X these gold franc values are shown. But while for the gold block countries the height of the wheat prices on the internal market alone has importance for the calculation of these values in gold francs, the values in gold francs in the countries where the fate of the currency is linked with that of the English pound, and also in Czechoslovakia where in the winter of 1933-34 the currency was similarly depreciated, follow fluctuations corresponding to rates of exchange. Thus the wheat grower in Great Britain, in 1930-31, had to sell 3.84 more quintals of wheat than the wheat grower in Germany to purchase 100 kg. of nitrogen in sulphate of ammonia, which, given the wheat prices of the time and the gold parity of the pound, represented 61.88 gold francs.

TABLE X. — *The Exchange Value of Wheat with Commercial Fertilisers in the Different Countries as compared with Germany expressed in gold francs for 1928-29 and 1933-34. (1)*

<i>Basic Slag.</i>					
	1928-29	1933-34		1928-29	1933-34
Germany . . .	± 0.00	± 0.00	Netherlands . .	+ 2.85	— 22.97
Czechoslovakia .	— 1.18	+ 4.46	Poland	+ 7.06	+ 14.25
France	— 16.47	— 9.06	Sweden	+ 13.37	+ 7.38
Great Britain. .	+ 5.93	+ 13.72			
Italy	— 9.63	—			
Netherlands . .	+ 1.09	— 12.58			
			<i>Potash.</i>		
			Germany	± 0.00	± 0.00
			Czechoslovakia .	+ 5.29	+ 0.85
			Denmark	+ 34.10	+ 17.03
			France	— 3.48	— 4.28
			Great Britain. .	+ 37.12	+ 27.76
			Italy	+ 20.34	+ 15.49
			Netherlands . .	+ 15.54	— 5.74
			Poland	+ 6.77	+ 14.12
			Sweden	+ 41.44	+ 17.89
<i>Superphosphate.</i>					
Germany	± 0.00	± 0.00			
Czechoslovakia .	+ 7.35	+ 5.52			
Denmark	+ 9.74	+ 10.60			
France	— 7.28	— 3.27			
Great Britain. .	+ 10.31	+ 14.58			
Italy	— 20.69	— 0.68			

(1) For nitrate of soda 1932-33.

Sulphate of Ammonia.

	1928-29	1933-34
Germany . . .	± 0.00	± 0.00
Czechoslovakia .	— 1.47	+ 9.13
Denmark . . .	+ 38.04	+ 22.59
France	— 11.40	— 2.27
Great Britain. .	+ 21.91	+ 25.72
Italy	— 24.26	+ 18.45
Netherlands . .	+ 19.70	— 51.69
Poland	— 46.29	+ 21.18

Nitrate of soda.

	1928-29	1932-33
Germany . . .	± 0.00	± 0.00
Czechoslovakia .	+ 52.91	+ 52.99
France	+ 19.96	+ 24.21
Great Britain. .	+ 64.97	+ 59.19
Netherlands . .	+ 63.93	— 13.14
Sweden	+ 93.31	+ 49.85

In 1933-34, however, the quantity of wheat which must be sold in order to purchase 100 kg. of nitrogen in sulphate of ammonia had slightly improved in England, as compared with Germany, and was as much as 3.28 quintals of wheat, but the price decline of wheat and the devaluation of the British pound made the difference in gold francs fall to 25.72.

In nearly all the countries with depreciated currencies it is possible to establish these changes in the valuation of the price relations expressed in gold francs; the opposite tendencies are very clearly apparent in the values for the Netherlands.

These relations cannot be further followed in detail.

There may here given for 1933-34, and for 1932-33 in the case of nitrate of soda and Leuna saltpetre, the differences in the exchange value expressed in gold francs and due to the changes which have taken place in the prices of wheat and in the currency, as affecting the place order of the countries. The following is the situation resulting: (1) Basic Slag, no change; (2) for superphosphate Denmark takes the seventh place and Poland the eighth; (3) for potash, Italy yields the fifth place to Poland which moves up from the sixth to the fifth, Denmark takes the seventh place, Sweden the eighth; (4) for sulphate of ammonia, no changes; (5) for nitrate of soda and Leuna saltpetre, Sweden takes the fourth place and Czechoslovakia the fifth.

The influences just described have not accordingly given rise to any very considerable changes.

THE EXCHANGE VALUE OF OATS AGAINST THE COMMERCIAL FERTILISERS.

For reasons of space this section will be confined to the comparison of the years 1928-29 and 1933-34 using the exchange value expressed in weight of oats as shown in Table XVI and to the comparison of the exchange value differences as compared with Germany in gold francs, as shown on Table XI.

Speaking quite generally the exchange value of oats with the commercial fertilisers has declined as regards oats from 1928-29 to 1933-34. Oat prices have declined more than the prices of commercial fertilisers with the result as stated. In comparison with countries the exchange value of oats with commercial fertilisers has improved for the German oat grower. For basic slag, superphosphate, and potash, Germany takes the first place in 1933-34 (for Chile nitrate of soda, or Leuna saltpetre, 1932-33); whereas in 1928-29 Germany occupied the second place for basic slag and superphosphate and stood first only for nitrate

of soda or Leuna saltpetre. In respect of sulphate of ammonia Germany occupies the second place only in 1933-34 after the Netherlands.

The Netherlands were also able greatly to improve their position as regards oats as compared with the other countries. For basic slag the advance was from the fifth place in 1928-29 to the second in 1933-34, for superphosphate from the fourth to the second, for sulphate of ammonia from the seventh to the first, and for nitrate of soda from the fifth place in 1928-29 to the fourth in 1932-33.

As regards the exchange value of oats with commercial fertilisers, Great Britain was able to improve its position partially, rising for basic slag from the sixth to the fourth place, for superphosphate from the sixth to the fifth, and for sulphate of ammonia from the sixth to the third. In respect of nitrate of soda (or equivalent Leuna saltpetre) Great Britain maintained in both years the third place, while for potash there was a fall from the eighth to the ninth place.

The situation has become especially worse for the French oat growers in these years in consequence of the very marked decline in the oat prices; in 1928-29 the price of oats was 130.79 frs. per quintal, while in 1933-34 it was 48.55 francs only, on the other hand the fall in prices of commercial fertilisers was less striking. In consequence the change in the position of France has been as follows: for basic slag from the first to the third place, for superphosphate from the second to the eighth place, for potash from the first to the fourth place, for sulphate of ammonia from the fourth to the eighth place. For nitrate of soda (or Leuna saltpetre) for both the years 1928-29 to 1932-33 France maintained the second place, as the drop in oat prices only began in 1933-34.

All other changes are shown in Table XI.

TABLE XI. — *Number of quintals of Oats required to purchase 100 kg of nutrients in the separate fertilisers in the different countries in 1928-29 and 1933-34 (or for nitrate of soda or Leuna saltpetre 1932-33).*

<i>Basic slag.</i>	
<i>1928-29</i>	<i>1933-34</i>
1. — France. 1.02	1. — Germany 1.74
2. — Italy 1.39	2. — Netherlands 2.41
3. — Germany. 1.46	3. — France 2.57
4. — Czechoslovakia 1.48	4. — Great Britain 2.67
5. — Netherlands 1.54	5. — Czechoslovakia 3.14
6. — Great Britain 1.58	6. — Italy (no quotation for basic slag).

Superphosphate.

<i>1928-29</i>		<i>1933-34</i>	
1. — Italy	1.24	1. — Germany	2.16
2. — France.	1.59	2. — Netherlands	2.25
3. — Germany.	1.67	3. — Italy.	2.77
4. — Netherlands	1.83	4. — Denmark	2.88
5. — Denmark	1.92	5. — Great Britain	3.04
6. — Great Britain	1.94	6. — Sweden	3.40
7. — Czechoslovakia	2.02	7. — Czechoslovakia	3.90
8. — Poland	2.36	8. — France	4.01
9. — Sweden	2.62	9. — Poland	4.53

Potash.

<i>1928-29</i>		<i>1933-34</i>	
1. — France.	0.70	1. — Germany	1.14
2. — Germany.	0.74	2. — Netherlands	1.80
3. — Czechoslovakia	0.97	3. — Czechoslovakia	1.86
4. — Poland	1.22	4. — France	1.87
5. — Netherlands	1.52	5. — Italy.	2.63
6. — Italy	1.62	6. — Denmark	2.82
7. — Denmark	2.10	7. — Poland	3.23
8. — Great Britain	2.11	8. — Sweden	3.30
9. — Sweden	2.84	9. — Great Britain	3.80

Sulphate of ammonia.

<i>1928-29</i>		<i>1933-34</i>	
1. — Poland	3.34	1. — Netherlands	4.61
2. — Italy	4.44	2. — Germany	4.62
3. — Germany.	4.49	3. — Great Britain	5.92
4. — France.	4.60	4. — Denmark	6.15
5. — Czechoslovakia	4.63	5. — Italy	7.41
6. — Great Britain	4.99	6. — Czechoslovakia	8.10
7. — Netherlands	5.52	7. — Poland	8.53
8. — Denmark	5.66	8. — France	9.08

Nitrate of soda.

1928-29		1932-33
1. - Germany	4.49	1. - Germany 5.91
2. - France	5.78	2. - France 6.92
3. - Great Britain	6.63	3. - Great Britain 9.03
4. - Czechoslovakia	6.69	4. - Netherlands 10.03
5. - Netherlands	7.69	5. - Sweden 11.01
6. - Sweden	8.57	6. - Czechoslovakia 12.02

To transform the exchange values expressed in weights of oats as compared with commercial fertilisers into gold (Swiss francs) the method adopted in the case of wheat is followed also here and the results will be found in Table XVII. Differences are also shown in comparison with Germany.

In commenting on this table special note may be taken of the change in the situation of the French oat growers, since it shows in a striking manner the position of a planned economy which covers a part only and not the whole of the products. Thus as compared with the situation of the German growers, that of the French oat growers has become much more unfavourable from 1928-29 to 1933-34. The difference in the exchange value between the two years is as follows:

Oats with basic slag	19.87 gold francs
» » superphosphate	20.36 » »
» » potash	8.25 » »
» » sulphate of ammonia	18.73 » »

On the other hand for nitrate of soda (or Leuna saltpetre) the exchange value of French oats improves in comparison with the German oats from 1928-29 to 1932-33 by 17.71 gold francs.

Transforming the values expressed in weight into values in gold francs, the following changes result for the year 1933-34 in the relative position of the different countries: (1) for basic slag, no change; (2) for superphosphate, Denmark passes to the third place, Italy to the fifth, France to the seventh, Czechoslovakia to the eighth; (3) for potash, France passes from the fourth to the third place in front of Czechoslovakia, Denmark from the sixth to the fifth, Italy from the fifth to the eighth, Poland from the seventh to the sixth, and Sweden from the eighth to the seventh, while Great Britain keeps the ninth place; (4) for sulphate of ammonia, France passes from the eighth to the fifth place, Italy from the fifth to the eighth, Czechoslovakia from the sixth to the seventh, Poland from the seventh to the sixth place. As regards nitrate of soda, or Leuna saltpetre, the order of the different countries on the scale remains the same for the years 1928-29 and 1932-33.

Table XII shows the gold franc values in order from the country where the exchange value of oats is most favourable to the country where the value is most unfavourable.

TABLE XII. — *To purchase 100 kg. of nutrients in the separate fertilisers, the oat grower of the different countries must pay in 1928-29 and 1933-34 (for nitrate of soda or Leuna saltpetre, 1932-33).... gold francs more or less than the grower in Germany.*

<i>Basic Slag.</i>			
1928-29		1933-34	
1. — France.	— 11.69	1. — Germany.	± 0.00
2. — Italy	— 1.99	2. — Netherlands	+ 6.96
3. — Germany.	± 0.00	3. — France.	+ 8.18
4. — Czechoslovakia.	+ 0.53	4. — Great Britain.	+ 8.53
5. — Netherlands	+ 1.63	5. — Czechoslovakia	+ 14.93
6. — Great Britain.	+ 3.15	6. — Italy (no quotation for basic slag)	
<i>Superphosphate</i>			
1928-29		1933-34	
1. — Italy	— 12.24	1. — Germany.	± 0.00
2. — France.	— 2.13	2. — Netherlands	+ 0.94
3. — Germany.	± 0.00	3. — Denmark.	+ 6.34
4. — Netherlands	+ 3.25	4. — Great Britain	+ 8.07
5. — Denmark	+ 6.00	5. — Italy	+ 8.35
6. — Great Britain	+ 7.08	6. — Sweden	+ 11.54
7. — Czechoslovakia	+ 9.27	7. — France.	+ 18.23
8. — Poland	+ 14.96	8. — Czechoslovakia	+ 18.56
9. — Sweden	+ 20.13	9. — Poland.	+ 18.85
<i>Potash.</i>			
1928-29		1933-34	
1. — France.	— 1.06	1. — Germany.	± 0.00
2. — Germany.	± 0.00	2. — Netherlands	+ 6.86
3. — Czechoslovakia	+ 6.09	3. — France.	+ 7.19
4. — Poland	+ 10.41	4. — Czechoslovakia	+ 7.68
5. — Netherlands	+ 15.86	5. — Denmark	+ 14.79
6. — Italy	+ 25.06	6. — Poland.	+ 16.62
7. — Denmark	+ 32.64	7. — Sweden	+ 20.15
8. — Great Britain	+ 35.91	8. — Italy	+ 20.40
9. — Sweden	+ 44.50	9. — Great Britain.	+ 24.39

Sulphate of ammonia.

1928-29		1932-34	
1. - Poland	— 24.93	1. - Netherlands	— 0.10
2. - Italy	— 1.42	2. - Germany.	± 0.00
3. - Germany.	± 0.00	3. - Great Britain.	+ 11.92
4. - France.	+ 2.92	4. - Denmark.	+ 43.96
5. - Czechoslovakia	+ 3.71	5. - France.	+ 21.65
6. - Great Britain	+ 13.11	6. - Poland.	+ 31.10
7. - Netherlands	+ 20.94	7. - Czechoslovakia	+ 37.11
8. - Denmark	+ 28.08	8. - Italy	+ 38.19

Nitrate of soda.

1928-29		1932-33	
1. - Germany.	± 0.00	1. - Germany.	± 0.00
2. - Great Britain	+ 29.88	2. - France.	+ 16.56
3. - France.	+ 34.27	3. - Great Britain.	+ 33.66
4. - Czechoslovakia	+ 58.24	4. - Netherlands	+ 36.78
5. - Netherlands.	+ 65.06	5. - Sweden	+ 42.27
6. - Sweden.	+ 86.46	6. - Czechoslovakia	+ 73.95

NORWEGIAN SALTPETRE (CALCIUM NITRATE) AND CALCIUM CYANAMIDE:

Unfortunately for both the other important nitrogenous fertilisers, calcium nitrate and calcium cyanamide, there are no statistical price to be obtained in any extent, so that here any attempt to represent the exchange value relations must be abandoned. It may be noted that as regards the calcium nitrate, or Norwegian saltpetre, of Norwegian origin, the production greatly increased in 1930, when the transition was made from production of fertilisers at exclusively 13 per cent. of nitrogen to production mainly to 15.5 per cent. nitrogen content. Up to 1932 however the output of this fertiliser again considerably declined, *viz.*, for the 15.5 per cent. nitrogen content from 406,000 tons in 1930 to 282,000 tons in 1932, and for the 13 per cent. content from 45,000 to 14,000 tons. Also the world production of calcium cyanamide, which in 1930 amounted to 1,275,000 tons, had declined by 1932 to 625,000 tons. In the absence of data, it is not possible to discuss further the reasons for this decline.

CONCLUSIONS.

One of the essential results reached in this article is that the relations between prices have shown that the height of the prices of and the consumption of commercial fertilisers, and in particular of the nitrogenous fertilisers, depend

on the height of the prices of certain products, or on the extent of the areas under cultivation of the crops which yield these products, or on the two factors taken together. Moreover our investigation seems to have shown that the consumption of nitrogenous fertilisers in any case, and also of fertilisers in general, has been influenced especially by the cultivation of cotton and sugarbeet, while no determinable influence has been exercised by wheat, a crop with a preference for the nutritive material of the soil itself.

On the world market for nitrogen it is observed that after the great decline in the consumption of nitrate of soda throughout the world, more especially in Germany on account of the war, but also in recent years in the United States of America and in Great Britain, the nitrogen market is ruled by synthetic nitrogen, and in particular by the German Haber-Bosch manufacture. Further sulphate of ammonia, as a by-product of the gas and coke factories, has also lost much of its importance, although, since the decrease in the consumption of nitrate of soda in the United States and in Great Britain, sulphate of ammonia is in these countries almost the sole important nitrogenous fertiliser.

The international comparisons established between the exchange values of wheat and oats respectively and the commercial fertilisers makes it clear that the intervention on the cereal market undertaken in various countries in favour of the growers has had the effect of maintaining satisfactory price relations between products and means of production, or of establishing new relations of the kind. These comparisons, on the other hand, also show that in certain countries where there has been no such influencing of the cereal market, or in those countries where such measures have perhaps been applied but without the desired result, extraordinarily unfavourable conditions have sometimes arisen, the effects of which on the agriculture of the countries concerned it is impossible to gauge here, and in fact the question lies outside the scope of this article.

CURT KAPPSTEIN

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AGRICULTURAL CO-OPERATION IN AUSTRIA (*Continued*).

§ 6. — CENTRAL CLEARING BANK (GIROZENTRALE).

Even in the time of the former Dual Monarchy the need was much felt for an organisation enabling the large credit institutions of the provinces to balance their surplus funds against applications. In consequence of unfavourable conditions, not always of an economic order, it never proved possible to set up a clearing centre for the various agricultural co-operative credit societies. In the new Austrian Republic it was essential in the first place to surmount a number of financial difficulties, and this went on till 16 August 1927, on which date a clearing house was at last successfully established, the *Girozentrale*, or central bank for balancing the payments for the Austrian co-operative societies.

The objects of this bank, which took the corporate form of a share company, are as follows: to facilitate the balancing of money exchanges between the federations and the co-operative societies, to arrange for the grant of mortgage loans or of credits on bills or other credits and to arrange for interest on capital deposited. For these purposes the bank is empowered to undertake the following business: to accept money from all comers on current account or in the form of cheques; in addition to accept money against cash orders of the co-operative federations which are members of the company, and also to take up bills, on account of the adhering co-operative federations and societies, as well as of individuals from whom it has received money; to buy and sell on commission from all comers, bills, money and foreign currencies (against cover paid in or previous delivery); to make loans on short term to co-operative federations associated with the business of the bank; to invest money in Austrian trust funds; to act as intermediary for clearing payments effected between co-operative federations and co-operative societies, etc.

In the foundation of the Central Clearing Bank (*Girozentrale*) the following organisations took part: the *Allgemeiner Verband für das landwirtschaftliche Genossenschaftswesen in Oesterreich* and all the provincial federations of agricultural co-operative societies, with the exception of the Salzburg federation. These were in all ten, with the addition of three central organisations of artisans' co-operative societies (*Allgemeiner Verband deutscher Erwerbs- und Wirtschaftsgenossenschaften in Oesterreich*, the *Oesterreichische Zentralgenossenschaftskasse* and the *Zentralverband gewerblicher Erwerbs- und Wirtschaftsgenossenschaften Oesterreichs*). Further, the most important co-operative societies of the German Reich took part: the *Preussische Zentralgenossenschaftskasse*, the *Deutsche Raiffeisenbank*, the *Reichsverband der deutschen landwirtschaftlichen Genossenschaften* and the *Deutscher Genossenschaftsverband*. In view of the impoverishment and the want of funds hampering most of the co-operative societies and federations, it was also essential to secure for the Bank in case of emergency the credit backing of a large Austrian bank, the Land Credit Bank (*Bodenkreditanstalt*).

It was also considered desirable to obtain the participation of the Provincial Land Mortgage Banks, or at least of those which had in recent years entered into good business relations with the central federations to the mutual advantage of either side.

The foundation capital of the Central Bank amounts to 5,000,000 schilling and is divided into 20,000 shares, which are payable to bearer and completely paid up, and issued at the nominal value of 250 schilling each. The *Bodenkreditanstalt* has subscribed 2,000,000 schilling of the share capital on its own account, the *Preussenkasse* 1,500,000 schilling. This latter, it may be noted, was transformed by an ordinance of the President of the *Reich* of 21 October 1932 into the *Deutsche Zentralgenossenschaftskasse*, and placed under the control of the *Reich* as the credit institution for the whole of the *Reich*. A total of 1,500,000 schilling was also subscribed by three co-operative Banks of the *Reich*. Out of these shares most of the Austrian federations have subscribed 125 shares each only, so as to ensure the right of voting at the general meetings. However the opportunity has been left open to the co-operative societies to increase their holdings in the event of any increase in capital (§ 13). In order to maintain the character of a co-operative organisation, a fuller participation of the federations was arranged by the Administrative Council: out of 18 members of this Council, nine are delegates of the Austrian co-operative societies and the President is appointed from among these; seven are elected by the German co-operative societies and two only by the *Bodenkreditanstalt*.

In recent years important changes have come about in the institutions which took part in the foundation of the Bank, partly in consequence of the collapse of the money market, but partly also for reasons of a more general kind. The Central Bank has undergone a change in its constitution in so far as that when the *Allgemeine Oesterreichische Bodenkreditanstalt* was amalgamated with the *Oesterreichische Kreditanstalt für Handel und Gewerbe*, advantage was taken of the opportunity to remove from the membership of the *Girozentrale* this large bank which had always occasioned a certain dissatisfaction among co-operative circles. In its place as a large shareholder, the *Oesterreichische Postsparkasse* was brought into the *Girozentrale*. By means of this substitution the *Girozentrale* rapidly gained autonomy, and independence of the capital of a large private bank, while the interest of a State institution was assured for its activity. As is well known the Austrian Federation itself acts as guarantor for all the engagements taken by the *Oesterreichische Postsparkasse*, which was founded in 1927 in place of the former post office savings bank dating from 1882.

Further reorganisation of the Central Bank was effected in March 1934 when, under a general agreement of the shareholders, the shares previously held by the co-operative federations of the German *Reich*, amounting to a total value of 3,000,000 schilling, were taken over by the Austrian shareholders. In consequence the administrative organisation of the Bank also underwent a change, as the German collaborators and the former managing director, the vice-presidents and the Executive Committee all withdrew. In this way the *Girozentrale* became a purely Austrian credit institution.

The Central Clearing Bank acts as guarantee for discount on behalf of the co-operative societies with the National Bank of Austria. Previously this Bank did not readily accept these agricultural bills, since there was no bank of sufficient standing among agricultural circles to answer for the solvency of customers. With the foundation of the Central Clearing Bank the money transactions of agriculture with the National Bank of Austria are placed on a new basis and obtain special facilities. It is moreover among the functions of the Central Clearing House to examine the credit possibilities of the different federations in order to arrange credit for them with full security. However as regards the right of audit on the part of the Bank, the functions of the legal supervisory body of the federations remain as before. No relation exists between this co-operative banking institution and the individual co-operative societies; it is linked with the societies only through the intermediary in each case of the respective federation. It establishes however the general lines of the working of the federations and thereby of that of the individual societies. It is understood that the co-operative societies must, so far as possible, in the first instance endeavour to balance their liquid assets and their deposits in their own localities, but that they must retain a certain reserve fund to be placed on deposit in the funds of the federation, at a fixed rate of interest, and the federations in their turn will deposit a reserve in the Central Clearing Bank, so that this latter may be in a position to balance the applications throughout the country within the actual credit possibilities.

This Central Bank thus serves as a clearing house for money transactions equally between agricultural co-operative societies and industrial societies. This is the more advantageous, as the larger quantity of liquid assets is usually in circulation in agricultural circles some months after the harvest, coinciding precisely with the largest credit demands of the industrial co-operative societies. The foundation of the Central Clearing Bank thus marks a real step in advance, not only in regard to co-operation but also to the whole of Austrian economy.

Originally the competence of the Central Bank did not extend to the consumers' co-operative societies, since for urban building and housing societies, savings and credit banks, thrift and provident societies, co-operative societies of production and labour, a special *Arbeiterbank* had been set up in 1922 in the legal form of a share company and not of a co-operative organisation under Austrian law. The share capital of 4,000,000 schilling was however in the hands of the co-operative societies concerned. The deposits in this Bank amounted to 4,453,375 schilling in 1923, and in 1932 to 54,313,678 schilling.

During February 1934 the *Arbeiterbank*, the credit organisation of the urban working classes, was dissolved by Ordinance and transferred for liquidation to the State Credit Institute for Public Undertakings and Works (*Kreditinstitut für öffentliche Unternehmungen und Arbeiten*). After the closing of the *Arbeiterbank* the Central Clearing Bank of Austrian co-operative societies had taken over also the Wholesale Company of Austrian Consumers' Unions with the consumers' societies belonging to this organisation. This led to a noticeable expansion of its field of activity and contributed to increase its importance for Austrian economy in general.

The rate of interest for borrowing fluctuated at the central banks during the years 1928 to 1932 between about 6 and 7 per cent.; the rate on loans was rather higher, from about 8 to 11 per cent., the interest at the National Bank of Austria also fluctuating, both for deposits and loans, between 6 and 8 per cent. In 1933 the average rate of interest fell to 5 per cent. On 27 June 1934 the General Council of the National Bank of Austria decided to lower to 4 ½ per cent., with effect from 28 June, the rate of discount on bills of exchange, warrants and securities. The rate of interest for deposits at the different banks, including the Central Clearing Bank, was, from 1 July 1934, fixed at around 3 ¼ per cent. according to the kind of deposit, whether short term or long term, and according to the location of the headquarters of the bank, whether situated at Vienna or in the capital of one of the provinces. Deposits in cash made by the Central Clearing Bank with other banking institutions may as a maximum earn an interest of 4 ½ per cent. On the other hand the Central Bank is authorised to pay interest up to 4 ½ per cent. on cash deposits made by the central co-operative banks which undertake local clearing house operations, and on those made by provincial credit institutions which, at the date on which these agreements came into force, were shareholders of the Central Bank.

According to the report of the Central Clearing Bank the balance sheet for 1932 was closed as follows (*Kompass*, Wien 1934, p. 429):

*Balance sheet Closing of the Central Clearing Bank
on 31 December 1932 (schilling).*

<i>Assets.</i>		<i>Liabilities.</i>	
Cash in bank, National Bank and Post Office		Share capital	5,000,000
Saving Bank	2,228,721	Reserve Fund	230,000
Assets at banks	525,308	Special Reserve	20,000
Bills of exchange	9,605,327	Debts owed by Bank . . .	13,972,155
Stocks or securities held . .	1,404,257	Transitory liabilities . .	15,435
Share in the Credit Co-operative Society for Industrial Enterprises at Vienna	251,000	Letters of credit and guarantees	49,999
Debts due to Bank	5,272,490	Profit	174,652
Investments	I		
Other assets	8,240	Total	19,462,241
Letters of credit and engagements assumed	49,999		
Transitory assets	116,398		
	<u>19,462,241</u>		

Allocation of profit.

Reserve Fund	100,000
Carried forward	74,652

The year 1933 shows a balance sheet of 22,000,000 schilling. The net profit for the year was 101,947.20 schilling. The net return proceeds would have been still more favourable if the Central Clearing Bank had not had to meet certain quite exceptional charges. The economic and financial situation in 1932 as also in 1933 was, for the Raiffeisen banks also, influenced by the unexpected failure of the *Oesterreichische Kreditsanstalt*. The want of confidence extended beyond the bank endangered. However as stated in the report of the *Allgemeiner Verband der landwirtschaftlichen Genossenschaften*, the co-operative societies were able, thanks to the soundness of their organisation, to meet this severe strain due to external causes without requiring external aid. The Central Clearing Bank in 1933 was in a position to meet, from its own funds and deposits and without having recourse to a credit at the National Bank of Austria, all applications for financing made to it. In its capacity as clearing house of agricultural co-operation it has not merely provided for the repayment of the surplus funds entrusted to it by the federations and central banks, but it has also granted considerable credits.

§ 7. — CO-OPERATIVE DAIRIES.

In accordance with the natural conditions governing agricultural production in Austria, stock-breeding and dairying take the first place, apart from forestry. The distribution of the cultivable areas of Austria is sufficient indication of this; there are 3,140,000 ha. of forest land and 4,360,000 ha. of agricultural land. Of this latter, 62 per cent., or 2,610,000 ha., consist of pasture lands and fodder crops which naturally take the first place and form the basis of the stock breeding and dairying so widely diffused through the country. Out of 433,300 farms in Austria, stockbreeding is combined with arable farming on 412,283, and only 21,077, or scarcely 5 per cent. of all the farms, are entirely without live stock. The medium-sized farms of from 5 to 20 hectares carry the most stock.

If the total value of the agricultural production, not including forestry, is estimated at 3,330,000,000 schilling, the dairy industry by itself accounts for 740,000,000 or nearly 20 per cent., and no other primary production of Austria approaches this value by a long way. Stock breeding is thus the backbone of all Austrian agriculture.

It is this marked importance of dairying in Austrian agriculture that gives their significance to the dairy co-operative societies. These societies aim at an increase in the milk production and also at a higher consumption of better quality milk and therefore a more remunerative price. The co-operative dairy collects the milk of its members and transforms it as required. A distinction may be made in Austria between the small co-operative dairies which collect the milk for direct distribution, and the large dairies, such as were founded about 1925, which are equipped with modern machinery, and undertake to utilise the milk supplied by the farmers who are members of the society and by the small co-operative dairies and to transform it, or that part which is not consumed as

fluid milk, into butter and cheese. In conformity with § 11 of the rules of these societies, every member has the right — *i.e.*, actually the right and not a compulsory obligation — to deliver to the society the milk produced on his farm in accordance with its requirements and with the arrangements agreed.

This is not, of course, an instance of co-operative production, properly so called, since the milk is produced on the individual peasant or family farms, but rather, to be exact, one of co-operative associations of milk producers who carry out one part of the handling process by co-operative methods. In § 1 of the rules the following statement occurs: "The object of the co-operative society is to transform and to utilise the milk produced on the farms of its members, at their request and on their account." These associations might be called co-operative societies for partial production.

In order to improve the quality of the butter, the Federation of co-operative societies of Lower Austria, which is the most important Dairy Federation in Austria, inaugurated on 1 July 1927, in all co-operative dairies, regular monthly inspections of butter. This inspection is effected on the 100 points system, usually employed in Austria, and the trade mark is granted only on condition that at least 80 points have been scored. The inspection of butter for quality has made possible the introduction of an official mark, on which appear the arms of Lower Austria with the words: Official Butter Control by the Lower Austrian Chamber of Agriculture. As a result of this standardisation of the butter and also of the organisation of marketing by the Lower Austrian Dairy Federation, it has been possible to place regularly on the market butter produced by the co-operative societies. At Innsbruck, in the Tyrol, there has been in existence since 1926 an Exchange of dairy products which has proved of great advantage for price fixing and marketing of butter.

Before the war, the dairy societies were fairly well developed, but war time conditions, the decline in dairy production, the reduction in stock feeds and the maximum prices of milk which were kept as low as possible, all contributed to injure the dairy industry. The number of cows in Lower Austria, for example, fell from 345,969 in 1900, to 234,019 in 1918, a decline of nearly 27 per cent. The average milk yield per cow and per day was before the war about five litres, and in 1917 three and a half litres only.

After the war, the situation of the co-operative dairies became very difficult, as was that of the whole country. In this critical period, the credit of 6,000,000 schilling granted by the League of Nations in 1926 for the encouragement of dairying was of considerable assistance. This credit was granted, in accordance with a proposal jointly submitted by one of the Federal provinces and by a Federation of agricultural co-operative societies or an important agricultural corporate body, these organisations guaranteeing the full and punctual repayment of the credits. The loans were made by the Ministry of Agriculture for 18 years and at a rate of interest with gradual repayment of the capital at 9.94 per cent.; they are paid over by the National Bank of Austria. Out of the total credits granted by the League of Nations, Lower Austria has obtained 1,990,000 schilling, Styria 1,555,000 schilling, Burgenland 500,000 schilling, Carinthia 400,000 schilling, Vorarlberg 289,000 schilling and Salzburg

40,000 schilling. With these funds it has been possible to establish 53 co-operative undertakings.

Co-operative dairies occupy the foremost place among the co-operative societies for agricultural production (on 1 January 1934 there were 983 dairies), and the second place among all the agricultural co-operative societies. This applies equally to their number and to the value of the products placed by them on the market.

The co-operative dairies are most widely diffused in Lower Austria, a region of pasturelands, where they number 700 out of the total of 983. In 1932, of the milk supplied to the town of Vienna 66 per cent. came from the co-operative dairies of Lower Austria. An idea will be gained of the output capacity of the co-operative dairies from the business done by the Lower Austrian Dairy (*Niederösterreichische Molkerei*) established at Vienna under the form of a central co-operative organisation. Founded in 1899 with 13 member societies and with an annual handling of 50,000,000 litres of milk, the number of the member societies had risen by 1 January 1933 to 153 co-operative societies for transformation of milk, while the milk collected in 1933 amounted to 58,000,000 litres, or 500,000 more than in 1932. The daily average collection of milk amounted to about 160,000 litres.

The extent to which the co-operative dairies organise the small farmers is seen from the fact that the 23,314 members of the 345 Lower Austrian dairy societies on 1 January 1932 own cows as follows:

- in 7,651 cases only one cow is owned;
- » 6,172 cases only two cows are owned;
- » 3,734 cases only three cows are owned;
- » 2,451 cases only four cows are owned;
- » 1,428 cases only five cows are owned;
- » 1,707 cases only six to ten cows owned and
- » 191 cases more than ten cows are owned.

The economic strength of the co-operative dairies may be demonstrated by their share in 1932 in the total manufacture of butter and cheese in Austria. According to Prof. Jutila, Minister of Agriculture of Finland (Report to the XIIIth International Congress of Agriculture, Budapest, 1934) the quantity of butter made by the co-operative dairies in Austria was 12,000,000 kg., or 92 per cent. of the total butter production of the dairies (13,000,000 kg.) (1), and the cheese made was 16,200,000 kg., or 92 per cent. of the whole quantity made by the dairies i.e. 17,500,000 kg. In consequence there is manufactured in the co-operative dairies more than 90 per cent., whether of butter or cheese, of all the Austrian

(1) The total production of butter may be estimated for 1933 at 20,000,000 kg. — unfortunately no official statistics are available — including about 7,000,000 kg. of farm butter which is consumed for the greater part on the farms themselves.

production of cheese and butter. The measures taken in favour of dairying in general refer then almost exclusively to the co-operative dairies.

Since the conclusion of the war dairy production has risen from 480,000,000 litres in 1919 to 2,800,000,000 litres in 1933, an increase of 583 per cent.

The milk yield took on, especially since 1929, so accelerated a pace that, in view of the decline of industrial production and of reduced consumption, the dairy problem is concerned less with the production of milk than with its marketing. Not only has the national market been saturated by the Austrian production, but a considerable export has been possible. The volume of butter exported during the years of crisis may be seen from the following figures (in quintals):

1929	10,028		
1930	18,649		
1931	12,976		
1932	7,097		
1933	11,819	<i>including:</i>	5,544 to Germany
			4,843 » Great Britain
			420 » Italy
January-August 1934	16,430	<i>including:</i>	9,989 to Great Britain
			3,297 » Italy
			1,935 » Germany
			1,106 » Belgium

While in 1926 it was necessary to import 210 truckloads (1) of butter, in 1930 it was already possible to export 186. In recent years the export has declined as compared with 1930 in consequence of the contraction of the external market, but in 1933 it was none the less possible to export 4,720 quintals more than in 1932. In 1934 the export has again increased: in the first eight months alone nearly as much was exported as in the course of the whole year 1930. But the price of the butter exported was much lower than even in 1933. Whereas in the first eight months of 1933 butter was 2.24 schilling per kg., this price fell in 1934 to 1.30 schilling. It was only in the last months of 1934 that the price improved by 40 groschen per kg. Another characteristic feature is the change that came about in the two last years, 1933 and 1934, in the structure of the Austrian export trade in butter directed towards the different countries, a change which will be noted merely in passing. In any case, even this larger export is insufficient, since the production of butter has increased to a still greater extent.

With this may be associated the decrease in the internal sales. The consumption of milk of the population of Vienna fell in recent years from 0.41 to 0.32 litres per head per day in consequence of the distress prevailing in large classes of the population (due largely to unemployment). The per capita consumption

(1) 1 truckload = 10 metric tons.

of butter also declined in Vienna to 2.75 kg. per annum and that of cheese to 4 kg. per annum, while the consumption of milk and milk products is three times as much in Switzerland, in the Netherlands, in Denmark, etc., as in Austria.

Parallel with the collapse in butter prices in 1933 and with the restriction of exports, there was an increase in the supply of fresh milk to Vienna, coming from regions which formerly, on account of distance, transport difficulties, etc., had been obliged to transform their milk into butter and cheese. All the Federated provinces together in 1933 supplied to the town of Vienna, 272,000,000 litres as compared with 27,000,000 litres only in 1918, in consequence ten times as much as in that year. In view of the resulting flooding of the Vienna market and the impossibility of selling for direct consumption any large proportion of the fresh milk, it had to be transformed into butter in Vienna, although this was unremunerative from the economic standpoint. The rivalry between the butter prices which depend on the prices of the world market and the milk prices the amount of which is determined by the local price then broke out in a particularly violent form. Producers and dealers in milk vied with each other in offering milk at low prices in order to snatch the sales.

With a view to eliminating this unhealthy rivalry between two products, fluid milk on the one hand, and manufacturing milk on the other, and to obtaining stability of dairy production, a law was promulgated on 17 July 1931 which created a Milk Equalisation Fund (*Milchausgleichsfond*) in the form of a corporate body, the object of which was to establish the greatest degree obtainable of regularity in the supply of milk and milk products to the market. The basic idea in setting up this fund was to raise a levy on fresh milk and therefrom to compensate the dairies where reduction of financial returns had resulted from transformation of their milk into butter and cheese.

Those dairy societies which supply fresh milk in consuming centres of more than 5,000 inhabitants are expected, as their contribution to this fund, to meet a levy on their price, of two or three *groschen* per litre, in favour of those who are obliged to transform their milk into butter, the object being to secure an approximately equal valorisation of the milk for all the farmers. In this way the co-operative dairy which usually transforms milk into butter and cheese can no longer have a special interest in undertaking the supply of fresh milk. The subsidies may be made available through the intermediary of the central agricultural and forestry associations, or by that of the co-operative federations, which undertake subsequently to distribute them to farmers and to dairying undertakings.

For the purpose of the payment of these equalising subsidies, a Committee, which is also administered by representatives of the co-operative dairy, establishes quotas for the supply of the Viennese market in fresh milk coming from the neighbouring regions of production. These quotas correspond to the quantities of fresh milk regularly absorbed for the supply of the Viennese market and coming from these regions, the object being to secure in this way the greatest possible stabilisation of milk prices.

The law on the Milk Equalising Fund imposes, it is true, a charge on the milk producers, although this is balanced by the guarantee of a fair price. The

effect of the equalising fund has also been that of refunding to the exporting firms the differences between the external prices of butter and the Vienna price, thus enabling them to resume export. The Vienna market was thereby relieved of the milk surplus and it became possible to obtain better prices. In consequence of this regulation of the market a more systematic distribution of the milk production was also gradually established in accordance with the natural areas of production, *viz.*, the zones in the immediate neighbourhood of Vienna supplying milk for direct consumption, and the more distant dairying zones mainly engaged in transformation of milk, especially in the region of the alpine pastures.

The activity of the Milk Equalisation Fund has been supplemented by that exercised in virtue of the Milk Regulation Ordinance (*Milchregulativ Verordnung*), which introduced a regulation of milk prices intended to prevent the indiscriminate offering for sale in large consuming centres of milk the hygienic quality of which might be open to challenge. The maximum and minimum prices were to be fixed in such a way as to leave a fair margin to the dairies, the milk dealing firms and other retailers, and so that at the same time the purchasing power of the population would be taken into account. These fixed prices (§ 9 of the Ordinance) are established without regard for the quota to be paid to the Milk Equalisation Fund.

The value of the milk administered by the Milk Equalisation Fund amounted in 1933 to a figure of at least some 250,000,000 schilling, the equivalent of a quantity of at least 1,000,000,000 litres. In 1934 there was an export of some 320 truckloads of butter and 200 of cheese. At the same time about 120 truckloads of butter were transformed for Austrian consumption into melted butter and at least 60 truckloads of cheese into soft cheese, both being made available for consumers at considerably reduced prices. These quantities of butter and cheese taken together correspond, according to the President of the Provincial Chamber of Styria, M. Kraft, to a surplus production of about 140,000,000 litres of milk for 1934, a quantity which, apart from the intervention of the Milk Equalisation Fund, would have caused a complete collapse of prices of milk and milk products.

“Dairying in Austria,” to quote M. Reither, Governor of Lower Austria and at present Minister of Agriculture, speaking at the General Assembly of the Lower Austrian Dairy Federation on Vienna on 17 May 1934, “possesses, and especially in Lower Austria, an organisation such as no other European country possesses. If it did not exist, many farmers would find themselves compelled to abandon dairying production. Up to the present all other possibilities have been exhausted and we shall now proceed to the last, planned economy.”

The planned economy, to which the speaker refers, is for the time being based on the Milk Law promulgated on 17 August 1934, the third among the measures taken recently for the protection of the dairy industry, and relating to the regulation of the whole trade in milk. In substance, the new regulation consists in the fact that, in accordance with the second part of the law in question, the supply of milk to the larger towns and to the city of Vienna will in future be effected according to a plan established in advance. The Minister of Agriculture must

every year and before 1 October prepare a scheme of supply for the next civil year, in collaboration with the Burgermeister of Vienna, the central agricultural corporations and the Management Committee of the Milk Equalisation Fund. In this plan will be established the quantities of milk which may be daily supplied to Vienna for direct consumption and for transformation and the quantities produced in Vienna itself that may be placed on sale. The maximum quantity of milk allowed must be fixed in such a way that the demand is covered and that at the same time there is no congestion of the market.

All persons desiring to deliver milk to Vienna must notify their agricultural corporation before 1 October, stating the date, the quantity and the destination (direct consumption or transformation) of the milk delivery which it is intended to make. In the plan prepared for the milk supply milk quotas are assigned to the different regions of production which will be re-assigned by the Chambers of Agriculture in these regions among the registered suppliers to whom delivery orders will be issued. At Vienna a Milk Office will also be established the duty of which will be to confirm the delivery orders and to check the sale notes.

The law on Milk Marketing came into force on 1 January 1935. The milk requirements of Vienna for 1935 will amount to 647,000 litres per day, but in virtue of the new law the delivery offers have reached 1,090,759 litres of which however 793,440 litres only will be accepted, 20 per cent. of the milk supplied being transformed in Vienna.

This State intervention in the milk trade, such as has already come about, for example, in Germany, England, the Netherlands and Hungary, is designed to consolidate to the utmost possible the milk market, and to introduce a practical guarantee of the prices of milk by establishing a normal relation between production and demand. The Milk Equalisation Fund still continues to exist, but its activity is now brought under the general legislation on milk.

In this way it is intended also to prevent a misuse of the Milk Equalisation Fund facilities such as would make it difficult adequately to maintain butter prices. In view of the registered delivery offers, it becomes impossible to market fresh milk without paying the contribution due to the Milk Equalisation Fund, and thus impossible to place a surplus on the market.

By the formation of co-operative societies for milk transformation and by the improvement in stock breeding and the improved care given to dairy stock, there has been secured in Austria in the sphere of dairying a noticeable increase in production, although the world economic crisis has very perceptibly affected the nascent national economy of Austria in its period of consolidation. In the mitigation of the marketing problem, a problem not confined to the narrow limits of the Danubian Republic but affecting the whole world, agricultural co-operation has played a considerable part. Undoubtedly co-operation by itself, no more than any other economic factor taken in isolation, could not contribute greatly to the remedying of the general crisis. It may however be safely assumed that the dairying crisis would have been much more severe in Austria if there had not been so satisfactory a development of co-operation in that country.

§ 8. — CO-OPERATIVE SOCIETIES FOR BREEDING AND SALE OF LIVE STOCK.

For stock breeding, as for dairy farming, the territory of Austria may be divided into two main zones, according to the main direction taken by the animal production: the alpine region, Vorarlberg, Carinthia, Salzburg and Tyrol with the wide mountain pastures where the main object of the animal husbandry practised is that of breeding, and the eastern plain where the stock farming consists chiefly in the production of milk and meat. It is naturally somewhat difficult to trace a sharp line of demarcation between these two zones, and in consequence the co-operative live stock societies may, according to the purpose with which the breeding is carried on, assume the form of breed associations properly so-called, or of dairy societies, or of both at once. The measures which have been taken for developing the zootechnical industry by the principal agricultural associations of the different countries of the Confederation take these various directions of live stock breeding into account.

The object alike of the co-operative breed societies and of the co-operative stock marketing societies is the general encouragement of stock breeding with special reference to the purity of the breeds. This is especially important for Austria where one finds a whole series of different cattle breeds on a territory of relatively limited extent. For example, the red spotted breed (Simmentaler) which is the most widely diffused, forming nearly 36 per cent. of all the cattle in the country and found especially in Burgenland, Lower Austria, Upper Austria, Styria and the Tyrol; the Pinzgau breed (Salzburg, Tyrol, Upper Austria, Styria) including about 20 per cent. of all cattle; the Murboden breeds, about 15 per cent. in Styria; the Brown Alpine cattle, 10 per cent., especially in the Vorarlberg, Western Tyrol, etc.; the Waldviertel, 8 per cent., etc.

The co-operative breed societies endeavour to increase the yield capacity of the animals in accordance with the special purpose of the breeder in each case. This purpose may consist frequently in combined aptitudes, as in the case of the Simmentaler and the Pinzgau breeds, where the breeding is directed equally at developing work capacity, fattening aptitude and good quality meat capacity. In consequence, however, of the progressive rationalisation of agriculture and taking into account the economic grounds and those of trade policy, the object in breeding is frequently to obtain a special aptitude, *e. g.*, milk in the case of the Brown cattle, meat with the Waldviertel breed, etc.

The activity of the co-operative stock marketing societies consists in purchase of breeding animals and grant of these animals to members for breeding purposes on their farms; joint acquisition of pasture grounds, whether on lease or by purchase, for the breeding animals of members; co-operative summer pasturage of the young animals; co-operative sale of breeding animals selected for sale from among those belonging to members; the promotion of sale of stock through a stock sales and information bureau, etc. In accordance with § 9 of the rules, pedigree certificates are issued by the officer in charge of the herd book in respect of the origin of the animals bred under the auspices

of the co-operative societies, such certificates being based on the notes contained in the herd books. A progressive development may be noted of the co-operative breed societies which undertake generally to keep in strict order the breed records and the herd books, as well as to carry out the testing of the milk obtained, in such a way that at the present time the pedigree and the yield certificate can practically always be supplied at the occasion of shows and transactions relating to calves either exhibited or sold.

The co-operative societies for sale of stock are relatively the most recent form of co-operative organisation, since in this direction special difficulties have been encountered in dispensing with middlemen dealings. The live stock trade is always very complicated in itself, and it cannot always be assumed that the members will easily acquire the technique of the trade and the knowledge of the markets.

The greater number of co-operative societies for breeding and marketing of stock were on 1 January 1934 to be found in Lower Austria, that is to say 310 out of a total of 445. According to Schrotterer (1) the importance, from the point of view of stock breeding of Lower Austria does not in any way correspond to its high percentage share in the total head of cattle in Austria, for the reason that in Lower Austria the calves are driven off to the butcher, and the cows kept solely for milking and subsequent fattening, in view of the very large demand on the Vienna market for meat. In consequence, it is the co-operative marketing of live stock, and not stock breeding, which is of primary importance in Lower Austria. The second place falls to Styria with 96 co-operative societies, followed by the Tyrol which has only 15, although according to Schrotterer, these are the best of all the co-operative live stock societies in point of organisation. On the same date there were only 13 societies of the kind in Carinthia, 2 in Burgenland and finally one in Vorarlberg.

The co-operative breed societies are grouped in each province for each breed in 23 Breed Federations, for example, the Federation of Pinzgau Breeders at Salzburg, that of breeders of Simmentaler cattle in Upper Austria, that of Brown cattle breeders in Styria, etc. In Lower Austria alone these societies are not grouped in Federations, but are directly subordinate to the Provincial Chamber of Agriculture.

The development of these societies began before the war as a result of the law of 30 December 1909 on the encouragement and improvement of live stock. The Farmers' Live Stock Office (*landwirtschaftliche Viehverwertungsstelle*) was founded in Vienna, for the purpose of enabling farmers to obtain better returns from their live stock and to arrange for direct sale to consumers. It did no business on its own account, but accepted slaughter cattle from the various agricultural co-operative societies for the market and paid to the societies the proceeds from the sales. In this way the Vienna market was, before the war, increasingly supplied with beasts at prices corresponding to the requirements of the co-operative societies. Although this institution was not established on

(1) Wirtschaftliche Grundlagen und die Entwicklung der Rindviehzucht in den Oesterreichischen Bundesländern, Salzburg, Kärnten, Tirol und Vorarlberg während der letzten Jahre. Hannover 1933.

co-operative principles, it proved of great economic and commercial advantage to the co-operative stock marketing societies, founded after 1909.

The basis for the development of Austrian stock breeding in the years immediately succeeding the war was given by the law on the encouragement of stock breeding which was enacted in 1922. This law related to: regulation of the keeping of bulls by co-operative societies and communes; improvement of the co-operative organisation of stock breeders; practical provision for the keeping of herd books and for milk recording; organisation of stock markets, etc. As a result of these measures, there has been a great increase in the output of products of cattle farming and it now forms one of the most important elements in the national economy of Austria.

The demand for meat in the Provinces of the Republic is almost completely covered by the national production, a result which is also due to the co-operative live stock societies. On the largest slaughter cattle market at Vienna, the supplies coming from the country itself are constantly increasing. Thus while in 1930 national production supplied to the Vienna market 48,566 head of cattle and the imports amounted to 104,822 head, this last forming thus two-thirds of all the supply in beef for this market, in 1934 the national production was 109,000 and the importation 24,000, or less than one fifth of the whole supply. While the national production has more than doubled, its contribution to the victualling of the country during these four years, the imports have shrunk in the same time to one quarter.

The pig production especially has made great progress since 1930. The national supplies increase rapidly, from 277,012 head in 1930 to 625,840 in 1933 and at the same time the importation of pigs from abroad is reduced from 737,000 to 465,000 in the respective years. The proportion of imports to the national production is thus reversed. The trade balance of the first half of 1934 reveals a further considerable diminution of the imports of live pigs, which have fallen from 332,000 quintals in January to June 1933 to 274,000 quintals in January to June 1934, while imports of pork meat have fallen from 42,000 to 27,000 quintals.

This tendency of commercial policy will hardly be taken as a symptom of autarchy, or as an intentional withdrawal on the part of Austria from foreign economic contacts, but rather, in the present conditions of multiplying restrictions in the international market, as a proof of the vitality of Austrian agriculture and as the expression of the national resolve to attain so far as possible economic independence.

Austria will remain however, as regards fat pigs, dependent as before on foreign supplies, although the home market in pork is supplied entirely from national resources and an export of pigs has even been in contemplation. On the other hand Austria is compelled to keep the supply of pigs to the Austrian markets partly open to the countries of Eastern Europe (Poland, Hungary and the Balkan States), because it is necessary to reserve to these countries a certain quota of pig imports as balancing Austrian exports of manufactured goods. The import quota of pigs from Poland, for example, has been fixed at 2,700 head per week.

Pig fattening has been restricted by an Ordinance of 27 October 1933. It was thereby enacted that on commercial undertakings having no direct connection with an agricultural production of suitable feed two pigs only may be kept, and on farms where there is an adequate self supply of feed not more than 100.

In view of the increase in national production and the simultaneous decline in the purchasing power of the population, the problem of the prices and marketing of animal products is, as with dairy products, one of the most important for the general interest. In the course of the years 1930-33 the prices of cattle fell on the Vienna market, which is the largest consumers' market in all Eastern Europe, by 20 per cent. and pig prices by 24 per cent., without any commensurate drop at the same time in costs of production.

Live stock prices were, according to official statistics, as follows before and after the war (per kg. of live weight in schilling, annual average):—

Years	Oxen	Cows	Calves	Pigs	Years	Oxen or Cows for fattening	Pigs for meat
1909	1.08	0.91	1.58	1.76	1927	1.41	2.17
1910	1.17	1.18	1.84	1.96	1928	1.35	1.95
1911	1.30	1.30	1.96	1.76	1929	1.50	2.37
1912	1.54	1.32	1.88	1.76	1930	1.45	2.02
1913	1.53	1.28	1.77	1.72	1931	1.19	1.50

In respect of stock for fattening, in particular oxen and cows, the annual average prices were in 1927-28 a little higher only than the pre-war, but during the years 1930-31 they were decidedly lower. Prices of slaughter pigs alone maintained a better level during 1927 to 1930, but in the other years these too fell as compared with the pre-war prices. Since 1931, moreover, live stock prices have shown a further downward tendency, as appears from the Vienna market quotation for May and June (schilling per kg.):—

	1933	1934
Live oxen	1.16	1.0
Calves	2.0	1.60
Pigs for slaughter	1.97	1.35
Live pigs	1.60	1.15

The difference affecting the stock farmers of Austria unfavourably is 13.8 per cent. for cattle, 19 per cent. for calves and from 28 to 30 per cent. for pigs.

Attempts are being made by means of various measures, in which the co-operative societies play an important part, to organise the market as effectively as possible, to balance supply and demand, and to slow down somewhat the much accelerated pace of the development of production. The organisation of the sale of slaughter stock, of meat and of pork products is regulated by the law

of 31 October 1931 on sale of live stock. The offer of slaughter stock on the cattle markets, as also the placing on the markets of meat and pork products is permissible only by the consent, renewed weekly, of the Austrian Stock Marketing Office (*Viehverkehrsstelle*) in the Ministry for Agriculture and Forests, or of the organisations empowered thereby. This office was founded in 1907 on the initiative of the General Federation of Agricultural Societies. Import of cattle and meat products from abroad is authorised only on condition that it does not injure the national production. The stabilisation of prices due to this regulation of the market has given the stock fatteners an opportunity of undertaking fattening of cattle on a large scale. In this way, the mountain regions which produce the animals for fattening and the pig farming enterprises have had adequate opportunities of marketing. This law has been of decisive importance for the activity and progress of co-operative societies for breeding or for sale of stock, for in this way the stabilisation of bids and prices, which were previously subject to great fluctuations, has been effected.

Mention may also be made of the law of 30 June 1932 on the credits granted in favour of fatteners. In virtue of this law, it has become possible to obtain loans on pledge of stock in course of fattening. The three institutions authorised to grant credits in favour of fatteners are the *Wiener Vieh- und Fleischmarktkasse*, the *Girozentrale*, and the *Deutsch-Oesterreichische Wirtschaftsverband für den Viehverkehr*. The first and the third of these institutes grant credits for fattening mainly to large farms. The *Girozentrale*, or Central Clearing Bank, mainly undertakes credits of this kind for the small farms. Where Raiffeisen banks are in existence, the applications for credit for fattening are passed through them, otherwise the applicants address the Central Clearing Bank directly.

An extension of the regulation of the stock trade is supplied by the Law of the Stock Fund of 22 December 1932, the object of which was the formation of a fund for the encouragement of stock sales, sales of meat and of other food stuffs produced in the country. This law prescribes the imposition of a special levy which must be paid to what is known as the live stock fund, and which is intended to meet the margin between the external prices of slaughter stock and the Austrian prices. The financial resources of the fund are administered by a committee formed by the industrial corporations and will be applied on the one hand to the encouragement of the consumption of meat and on the other to the promotion of the export of breeding animals and live stock for general purposes.

All these measures illustrate, moreover, the entrance of planned economy also into stock farming and stock dealing, by the regulation of the production of meat, by the control of the market, and, in addition, by price formation. These new principles of agricultural policy may more easily find their realisation in the country thanks to the grouping of farmers in their vocational associations and in the rural co-operative producers' societies.

M. TCHERKINSKY.

(To be continued)

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INTERNATIONAL REVIEW OF AGRICULTURE

PUBLISHED

BY THE

INTERNATIONAL INSTITUTE OF AGRICULTURE



XXVIth Year — No. 3 — March, 1935

ROME

VILLA UMBERTO I (110)

1935

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AGRICULTURAL ECONOMICS AND SOCIOLOGY

MONTHLY BULLETIN

OF

AGRICULTURAL ECONOMICS AND SOCIOLOGY

THE WHEAT POLICY OF FRANCE SINCE 1929

A survey of the French wheat policy since 1929 should be of interest in this Review for a twofold reason:

1. France has attempted in various ways to keep up the price of wheat, and thereby valuable experience has been gained as to the conditions and possibilities of influencing prices and in regard to the effects of such influencing.

2. the nature and the success of the measures taken in France are of the greatest importance; it is these factors that will decide whether France will remain in the future as it has been in the past, a country which on the whole tends to cover its own requirements in wheat, or whether on the other hand it will become an exporting country.

THE WHEAT POLICY DURING THE YEAR 1929-30.

In view of the large proportion of the total area under cereal cropping and of the total area under arable cultivation which is devoted to wheat in France, it is readily intelligible that the price of wheat is of first importance for the economic prosperity of French agriculture.

It was not till after the good harvest of 1929 that any systematic attempt was made to influence the price of wheat in post-war France. Up to that time it had been easy to maintain wheat prices at a sufficiently high level, in view of the considerable import requirements of wheat and other cereals.

The abundant crop of 1929, which, with 90,000,000 quintals on a reduced area of sowings, reached the prewar level, made stricter measures of protection essential. With the law of 1. December 1929 the path already taken by other countries was followed and a minimum percentage milling quota of national wheat was introduced, for flours for breadmaking. This percentage was fixed at 97 per cent. and kept at that level up to the end of the year in question. The provisions as to temporary importation were also made stricter by this same law.

Another measure designed to keep up the wheat market was that of the *raising of the import duty on wheat* from 50 to 80 francs with effect from 20 May 1930. The previous development of the protection policy in respect of wheat is shown on Table III.

Of importance in regard to the future were the law of 30 April 1930 and the Decree of 31 May 1930 on the establishment of permanent wheat depots

and for the encouragement of the erection and utilisation of silos and other grain warehouses. By a Decree of 30 July 1930 provision was made for a reform of the *Paris Bourse de Commerce* with the object of preventing non-professional speculation.

THE WHEAT POLICY IN THE YEARS 1930-31 AND 1931-32.

By means of customs duties and imposition of milling quotas of national wheat it proved practicable for the seasons 1930-31 and 1931-32 to keep up the prices of wheat, more particularly as the less favourable harvests of 1930 and 1931 made necessary considerable imports (see Table I).

With the increased import requirements it was possible to reduce the milling quota of national wheats temporarily without prejudice to the markets on several occasions, *viz.*, down to 70 per cent. towards the end of 1930-31, and to 50 per cent. in May 1932.

As a more far-reaching measure for the protection of the national wheat production there should be mentioned the Decree of 10 November 1931, by which importation was made dependent on import permits. These permits are not transferable and must indicate precisely the quantity and quality of the commodity to be imported.

TABLE I. — *Production of and External Trade in Wheat in France.*

Years 1 August to 31 July	Area 1000 ha.	Yield per ha. quintals	Production 1000 quintals	Wheat: Excess of imports (+) or of exports (—) 1000 quintals	Wheat flour: Excess of imports (+) or of exports (—) 1000 quintals	Total wheat and flour Excess of imports (+) or of exports (—) 1000 quintals (1)
Average 1909/10-1913/14	(2) 6,787	(2) 13.1	(2) 88,627	+ (3) 12,034	— (3) 118	+ (3) 11,877
1924/25	5,512	13.9	76,525	+ 12,016	— 349	+ 12,481
1925/26	5,614	16.0	89,905	+ 7,793	— 231	+ 8,100
1926/27	5,249	12.0	63,077	+ 16,979	— 25	+ 17,012
1927/28	5,237	14.2	75,150	+ 12,670	+ 112	+ 12,819
1928/29	5,243	14.6	76,554	+ 14,281	+ 169	+ 14,506
Average 1924/25-1928/29	5,381	14.2	76,242	+ 12,748	— 65	+ 12,661
1929/30	5,397	17.0	91,786	+ 5,941	— 1,545	+ 2,982
1930/31	5,374	11.6	62,081	+ 20,698	— 3,108	+ 16,553
1931/32	5,196	13.8	71,882	+ 23,700	— 2,042	+ 20,977
1932/33	5,435	16.7	90,771	+ 11,301	— 1,648	+ 9,104
1933/34	5,464	18.0	98,611	+ 6,617	— 1,457	+ 4,674
Average 1929/30-1933/34	5,373	15.5	83,027	+ 13,431	— 1,960	+ 10,818
1934/35	5,305	17.0	90,000	—	—	—

(1) Flour reduced to grain on the basis of 1 quintal of flour = 1.33333. quintal of grain. —

(2) Present frontiers. — (3) Former frontiers.

THE WHEAT POLICY IN 1932-33

The good harvest of 1932 led to a further stiffening of the wheat policy.

The *milling prescriptions for national wheats* were on 1 August 1932 raised to 85 per cent., on 3 August to 97 per cent., on 2 December 1932 to 99 per cent. and on 25 March 1933 to 100 per cent.

On 12 October 1932 a Decree was promulgated for ensuring the formation and maintenance of a guarantee stock (*stock de surété*) of wheat in application of the law of 30 April 1930.

By the law of 26 January 1933 considerable funds were made available. The following sums were assigned:

1. 300,000,000 francs for the grant to agricultural credit banks of advances for facilitating the financing of crops;
2. 300,000,000 francs for the formation of a stock of wheat up to 5,000,000 quintals;
3. 30,000,000 francs for warehousing premiums;
4. one million francs for experiments in the use of coloured wheats for feeds.

A number of decrees were promulgated for the carrying out of the law of 26 January 1933. A decree of 9 February 1933 fixed the conditions for the stocking of wheat. A decree of 8 March 1933 included provisions prescribing the formation of a guarantee stock of wheat and fixed the purchase price for the period up to 31 May 1933 at 115 francs per quintal with a weight per hectolitre of 72 kg. In virtue of this regulation it has been possible to warehouse 5,000,000 quintals of wheat up to the end of July 1933.

Further funds were allocated by the law of 14 April 1933. By this law there was granted up to 31 December 1933 a credit of 20,000,000 francs which was to be used for granting premiums on the utilisation of national wheat for purposes other than human food and manufacture of alcohol.

With a view to restriction of imports, the wheat import agreed from Hungary was, on 9 May 1933, transformed into a maize quota of 400,000 quintals, with repayment of 40 per cent. of the minimum customs duty on such imports effected between 9 May and 30 September.

Other measures referred to the secondary cereals. By a decree of 16 September 1932 the duties on oats, rye and maize and their derivatives were raised. The rates of the general tariff were fixed for whole oats, rye and maize at 80 francs and those of the minimum tariff at 40 francs per 100 kg. The "small grain" maize intended for poultry and stock feed is admitted to importation with the advantage of a 40 per cent. reduction of duty within the limit of a quota; maize intended for the starch and glucose industries is admitted to importation at a 35 per cent. reduction of duty under certain conditions.

With the object of still further restricting imports from other countries quotas were fixed by a Decree and Ordinance of 16 September 1932 for barleys and brans, and by Decree and Ordinance of 8 March 1933 also for maize.

THE WHEAT POLICY FOR THE YEARS 1933-34 AND 1934-35 UP TO THE
PUBLICATION OF THE LAW OF 24 DECEMBER 1934.

By the measures enumerated above, equilibrium on the wheat market was ensured up to about the second quarter of 1933. Subsequently this equilibrium was increasingly disturbed since the harvest of 1933 promised also to be favourable, and in consequence the disposal of the large existing stocks became very difficult. When, in the middle of June 1933, wheat prices fell to 84 francs, the fresh regulation of the wheat market became an increasingly urgent question. This new regulation was effected by means of the law of 10 July 1933.

By the law of 10 July 1933 a fundamental change was introduced into the wheat policy by means of the *legal minimum prices*. The minimum price for wheat of commercial quality of a specific weight at least equal to 76 kg. the hectolitre was at first 115 francs the quintal and subsequently was increased on the first of each month by 1.50 francs, the last increase being made on 1 July 1934. The validity of the minimum prices extended over the period from 15 July 1933 to 15 July 1934.

In addition to the suspension for two months of the import of soft wheats, the law contained the following measures for the organisation and relief of the congestion of the wheat market:

1. the constitution of wheat stocks intended for sale by lots and the carry-over of surpluses to the following season;
2. the institution of denaturation premiums for encouraging the utilisation of national wheats and low grade flours for purposes other than human food and the manufacture of alcohol;
3. the institution of export premiums;
4. the lowering of the rate of extraction in the manufacture of breadstuff flours.

The business of formation of stocks for sales in lots and of the carry-over of surpluses to the following season was entrusted to the agricultural co-operative societies and (after the enactment of the law of 17 March 1934) also to the dealers and manufacturers. As stockage indemnity, a premium of from 3 to 5 francs per annum and per quintal was at first granted. By the law of 17 March 1934 the Government guaranteed a price of 131.50 francs per quintal to compensate for the abolition of the premium. In 1933-34 some 19,000,000 quintals profited by the foregoing provisions.

In order to encourage the sale of the quantities of wheat in stock and carry-over it was ordered that in the preparation of breadstuff flours the millers should use a fixed percentage of this wheat. For distances of more than 50 km. mills were granted a transport indemnity for the carriage of wheats held in stock or as carry-over. The percentage of these wheats which had to be utilised was:

from 1 January 1934	20 per cent.
» 1 February »	25 » »
» 1 May »	35 » »
» 1 July »	50 » »
» 1 August »	65 » »

Conditions for the denaturation of wheat were published by a Decree of 5 August 1934. The premium which must not exceed the existing difference between the official prices of wheat and the prices of the other cereals, was at first fixed at 50 francs. About 5,000,000 quintals were treated in the farming season 1933.

The export premium was paid under the form of a reimbursement of the customs duty of 80 francs per quintal of national wheat exported (Decree of 22 September 1933). This measure was justified in regard to other countries by declaring that the export was merely re-export of the quantities undoubtedly too high which had been imported during the preceding years. In spite of the reimbursement of the customs duty, export business was not at first brisk, because the difference between the premium and the legal price within the country was soon higher than the price that could be obtained by making the export. The law of 28 December 1933 provided in consequence that, by exception to Art. 20 of the Law of 10 July 1933, the Minister of Agriculture should fix, on the proposal of the *Comité national du blé* the amount of the reimbursement assigned per quintal. From 15 June 1934 this sum is fixed at 90 francs.

The rate of extraction was established at 65 per cent. by Decree of 6 September 1933.

In order to ensure the collaboration of all concerned there was formed, in accordance with the law of 10 July 1933, the *Comité national de défense et d'organisation du marché du blé*, consisting of representatives of agriculture, consumers, milling and trade. This Committee was to act as advisory body to the Ministry of Agriculture. *Departmental Committees* of similar type were constituted in the prefectures.

Mention may be made of other measures taken in 1933-34, *viz.*, the transformation of the wheat quota assigned to Yugoslavia into a maize quota of 240,000 quintals arranged on the same conditions as that for Hungary (Decree of 15 July 1933); the authorisation given to the *Caisse de crédit agricole* to make advances up to 50,000,000 francs (Decree of 6 August 1933); the reintroduction of the compulsory utilisation of wheat of the 1932 harvest for the manufacture of flours for breadmaking at a percentage of 35 per cent. (Decree of 18 August 1933); the foreign import quota of oats, rye, buckwheat, durra, millet and canary grass (Decree of 26 August 1933); the increase up to 110,000,000 francs of the loans to be made in virtue of the Decree of 6 August 1933 (Decree of 11 September 1933).

As already stated, *two supplementary laws* were enacted for the purpose of rendering more effective under existing condition the original law on wheat, i. e., the laws of 28 December 1933 and of 17 March 1934:

TABLE II. — *Prices of Wheat at Paris in francs per metric quintal*
(national wheat 75-77 kg. per hectolitre) (1).

Month	1927-28	1928-29	1929-30	1930-31	1931-32	1932-33	1933-34	1934-35
August	163.06	153.15	148.30	168.06	162.45	124.35	119.00	111.00
September . . .	154.91	152.75	147.21	171.56	166.30	117.25	120.00	111.00
October	151.44	155.69	145.44	168.80	162.45	114.70	121.00	111.00
November . . .	148.16	154.30	142.65	164.75	161.50	112.80	122.00	112.00
December . . .	155.33	152.06	139.94	167.12	163.65	111.75	123.00	(2) 104.75
January	156.22	154.44	137.00	173.10	167.45	109.10	124.50	(2) 77.75
February	155.56	158.06	129.50	176.75	171.60	107.35	126.00	(2) 80.50
March	162.45	160.55	133.20	181.25	173.20	99.75	127.50	—
April	171.37	155.50	132.37	185.95	170.10	99.00	129.00	—
May	179.87	154.05	127.70	185.60	175.25	97.55	130.50	—
June	176.95	153.94	133.50	188.10	170.50	96.15	132.00	—
July	166.62	159.25	155.87	168.80	160.45	112.10	133.50	—
Yearly Averages.	161.98	155.35	139.42	175.00	167.1	107.2	125.65	—

(1) According to the *Monthly Crop Report and Agricultural Statistics* of the International Institute of Agriculture.

(2) Average prices for the 1934 crop.

The law of 28 December 1933 introduced the collection, on the price of each quintal entering the mill, of a tax of 3 francs charged on the grower. The law also contained some important prohibitions. It prohibited the sale, or the offer or use for breadmaking, of panifiable flours, at a price not corresponding to the legal price of wheat which will be fixed in each department by the Prefect in the conditions prescribed by the law of 31 August 1924. In order to prevent an extension of the area under wheat cultivation, the law further forbade the growing of wheat on land which had already carried wheat in the previous year and also the sowing of spring wheats in 1934 on lands other than those on which it had been intended to sow winter wheat, in accordance with the normal crop rotation. Any infringement of these prescriptions will be punished by a fine of 500 francs per hectare thus sown.

The law of 17 March 1934 imposed on farmers the duty of returning the areas under wheat cultivation and the wheat stocks held by them at a given moment.

TABLE III. — *Wheat Import Duties in France.*

(francs per quintal)

From 1861 to 1881	0.50	From 16 October 1915	7.00
» 1881 to 1885	0.50	» 1 July 1921	14.00
» 28 March 1885	3.00	» 10 January 1924	7.00
» 29 March 1887	5.00	» 1 August 1924	14.00
» 1 July 1891	3.00	» 1 August 1926	18.20
» 1 July 1892	5.00	» 2 September 1927	25.00
» 27 February 1894	7.00	» 18 November 1927	35.00
» 4 May 1898	7.00	» 23 May 1929	50.00
» 1 July 1898	7.00	» 20 May 1930	80.00
» 31 July 1914	exempt.		

TABLE IV. — *Maximum Quantity of Foreign Soft Wheats which may be incorporated in Flours for Consumption as Food.*

Decree of:		Decree of:	
2 December 1929	3 per cent.	14 March 1932	30 per cent.
26 July 1930	10 » »	19 March 1932	35 » »
11 April 1931	15 » »	26 March 1932	40 » »
15 April 1931	20 » »	1 April 1932	45 » »
27 April 1931	25 » »	6 May 1932	40 » »
16 June 1931	30 » »	24 May 1932	45 » »
30 June 1931	25 » »	27 May 1932	50 » »
3 July 1931	20 » »	16 June 1932	45 » »
9 July 1931	15 » »	23 June 1932	40 » »
24 July 1931	10 » »	30 June 1932	35 » »
24 November 1931	3 » »	2 July 1932	25 » »
30 January 1932	10 » »	1 August 1932	15 » »
9 February 1932	15 » »	3 August 1932	3 » »
12 February 1932	20 » »	2 December 1932	1 » »
24 February 1932	25 » »	25 March 1932	0 » »

In order meet *the expenditure on the wheat policy*, a progressive milling tax was introduced by the law of 10 July 1933 and a tax on production by the law of 28 December 1933. In addition, certain other receipts have been earmarked for this purpose coming from customs duties and fines paid for infringements of the laws on wheat. As the funds from these sources were not immediately available, and as the co-operative societies could not indefinitely undertake the financing of the crops from their own funds, a sum of 100,000,000 francs was allocated by the law of 28 February 1934 which the State could place as loans at the disposal of the *Caisse nationale de crédit agricole* for the protection of the wheat market. By *the law of 4 July 1934*, this sum was raised to 300,000,000 francs. These credits were completely utilised.

The regulation introduced by the law of 10 July 1933 was extended to the harvest of 1934 by the *law of 9 July 1934*, although with certain modifications. In accordance with this new law it was the Minister of Agriculture who established the fixed prices and determined the period of their application. The total of the advances which might be placed by the State at the disposal of the *Caisse nationale de crédit agricole* for the protection of the wheat market was raised to 500,000,000 francs. The new minimum prices were fixed by an Ordinance of 13 July 1934. For the period up to 31 October 1934 a price of 108 francs per-quintal was established for the wheat of the new crop; this price was later to rise gradually up to 118 francs for the period from 1 June to 15 July 1935. The corresponding prices of the three Algerian departments were from 104 to 114 francs. For the wheat carry-over of the crop of 1933 the price of 131.5 francs established previously remained in force.

By a decree of 10 July 1934 it is prescribed that a *minimum percentage of wheat of the 1933 crop* must be employed in the manufacture of flours for bread-making. From 1 August 1934 the percentage was 65.

For the *denaturation of wheat of the 1933 crop* a premium of 48 francs per quintal was later granted (Decree of 26 September 1934).

By Decree of 30 July 1934 the *maximum quantity of panifiable flour that the millers might extract from one quintal of wheat*, whatever the specific weight of the wheat, was fixed again at 65 kg.

The wheat policy inaugurated by the law of 10 July 1933 undoubtedly prevented a complete break-down on the wheat market. Apart from the measures just described, prices would have fallen to an incredibly low level. This is immediately clear from an inspection of the figures contained in the annexed tables. These may be further supplemented by some figures relating to the stocks existing at the end of the two last farming seasons. A short time after the harvest of 1933, the Ministry of Agriculture estimated the available stocks of wheat at 107,000,000 quintals (stocks on 1 August 1933, 12,000,000; yield of harvests in France, 93,000,000, in North Africa 2,000,000 quintals), and the requirements at about 94,500,000 quintals (for food purposes, 84,500,000 quintals; seed wheat 10,000,000 quintals). It soon appeared however that the 1933 harvest was larger by some 6,000,000 quintals, and that, in consequence, there was a much larger surplus. From private sources, stocks from the harvest of 1932 were declared to be considerably higher. In the year 1933-34 stocks

continued to accumulate and at the end of 1933-34, were estimated as being from 20 to 30,000,000 quintals.

The measures thus taken to meet the situation that had arisen on the wheat market were characterised by the fact that many of the measures had reference to the moment only, that it was impossible to control their application or their observance, and that there was an absence of the necessary co-ordination of the measures among themselves and with the rest of agrarian policy.

That the isolated wheat policy has further increased the difficulties may undoubtedly be admitted. The good wheat harvests of recent years were certainly not due solely to good weather conditions. The maintenance of wheat prices accompanied by, at the same time, an intensification of the crisis on nearly all the agricultural markets, has resulted not only in a particularly careful cultivation of the area under wheat, but also here and there in an extension of areas under wheat. Wheat growing was, in any case, much more remunerative than that of the other cereals, in respect of which, as of rice, there was a considerable excess of imports. Some measures directed towards the protection of the wheat market, such as the policy of denaturation of wheat, had an unfavourable effect on the other cereals.

During last year it has proved possible to reduce considerably the imports of the other cereals. But at the present time the possibility of a larger restriction of imports is still only very slight, in view of the extent to which the colonies enter as importers of cereals. Some valuable data have been obtained for judging of this question by following the price movement of the secondary cereals as compared with wheat. Prices in francs per quintal in Paris were as follows:

Years	Wheat	Oats	Brewing barley	Rye
1928-29	155.35	127.85	133.4	—
1931-32	167.1	101.75	95.15	98.25
1933-34	125.65	48.00	77.85	71.75

TABLE V. — *Excess of Imports (+) or of Exports (—) of Cereals in France*
(thousand quintals)

Years	Wheat	Wheat flour	Rye	Barley	Oats	Maize	Rice	
							rough	milled
Average :								
1925/29 . .	+ 12,531	+ 8	+ 326	+ 376	+ 893	+ 6,744	+ 325	+ 1,448
1930, . . .	+ 5,895	— 2,618	+ 224	+ 1,408	+ 650	+ 8,085	+ 366	+ 1,334
1931, . . .	+ 23,645	— 3,385	+ 766	+ 4,204	+ 819	+ 10,615	+ 376	+ 2,274
1932, . . .	+ 21,200	— 1,308	+ 560	+ 4,453	+ 1,569	+ 11,699	+ 361	+ 3,025
1933, . . .	+ 7,796	— 1,772	+ 115	+ 2,415	+ 232	+ 7,201	+ 346	+ 4,994
1934, . . .	+ 3,601	— 1,371	+ 20	+ 1,500	+ 46	+ 6,750	+ 367	+ 5,760

By two decrees of 15 June 1934 the importation of rice, with the exception of rice coming from Indo-China, was made subject to quota-fixing. This measure has however not been put into force, as the two decrees were cancelled by two others of 19 July 1934.

REGULATION OF THE WHEAT MARKET BY THE LAW OF 24 DECEMBER 1934.

The course of events which has just been outlined made increasingly necessary a change in the measures previously taken, which had clearly proved to be inappropriate or at least inadequate for ensuring sound market conditions. It was in this way that the *law of 24 December 1934* came to be passed.

The chief modifications introduced by this law are that the minimum prices and the regulation of the rate of flour extraction are abolished, and the growers making bread on their own farm may have their grain milled without the obligation of admixture of wheat of the carry-over stocks.

The law is divided into three sections:

- I. Permanent measures for regulation of the wheat market;
- II. Absorption of surpluses;
- III. Temporary measures and adaptation of the Codification Decree of 6 October 1934.

Under section I (*permanent measures of market regulation*) the sowing in wheat is prohibited on areas larger than those assigned by local custom to rotation cropping, as also any extension of the areas sown to wheat in relation to the average of the two, and after 1935, of the three previous years. The prohibition also extends to the cultivation of wheat on land which carried this crop in the previous year, except in regions where this practice is traditional and with reserve of an area of one hectare for family food supply. The Government may in addition revise and curtail the list of varieties of wheat with a view to checking the use of high yielding varieties the flour from which is of poor baking quality.

For statistical purposes all growers are required to make each year to the mayor's office before 1 April declarations in respect of cultivable lands, lands sown to wheat, and quantities of wheat harvested in the previous year. The declarations will be posted.

In regard to *absorption of surpluses*, the Minister of Agriculture is empowered to reabsorb the surplus of wheat stocks by the following means:

- (1) direct purchases for the formation of a guarantee stock;
- (2) denaturation of the grain;
- (3) exportation of wheat for breadmaking and for feed.

Purchasing operations are to be carried out directly, one half on the wheat held in stocks by the co-operative societies and the remainder by direct purchases of other wheats from the grower. From 1 July 1935, the Minister of Agri-

culture will in addition take over the wheat stocks of the 1933 and 1934 wheat crops, still existing at that date, at the average price of the first six months of 1935 on the open market of Paris.

With the object of increasing the bread consumption by means of a price reduction, the Departmental Committees will proceed to a revision of the milling and baking margins within a period of one month dating from the publication of the present law.

The *third section of the law* confers on the Council of Ministers the power of re-establishing by decree a minimum price. A fixed price exists only for the wheat carry-over of 1933 and the wheat stocks of 1934. The rate is 131.50 fr. for the carry-over and 97 fr. for the stocks. Co-operative societies will receive for the half of the wheat stocks held by them a premium of 11 fr. per quintal.

So long as these temporary measures remain in force there will also be in force the regulations issued previously for their execution. Thus, for example, the Minister of Agriculture is empowered to fix by decree the maximum price for baking flour for the different departments. In addition there may be fixed a minimum quantity of national stock wheat for obligatory milling. The grower, however, who makes his own bread on the farm may have his wheat ground without the obligation of an admixture of carry-over wheat.

The *general expenditure on the interventions* has been estimated at 1,500,000,000 francs. The funds to be raised by means of credit are not to be a burden on State resources but are to be amortised by means of special taxes in the course of 10 years. The two most important sources of revenue for the amortisation of the credits are: —

- (1) the progressive milling tax on the quantity milled (1.5 to 5 fr. per quintal);
- (2) the tax of 4 fr. per quintal paid by the wheat growers (formerly 3 francs) on the quantities of wheat milled for the manufacture of flours intended for human consumption.

In addition various receipts from import charges and from fines for infringement of legal prescriptions are assigned to the same purpose. By a decree of 24 December 1934 the quantities of wheat intended for consumption in the grower's family have been exempted from the tax on production.

For the execution of the law of 24 December 1934 various decrees have been issued. By a decree of 28 December 1934 a 45 per cent. admixture of the wheat carry-over and a 15 per cent. admixture of the national wheat stocks of 1934 has been imposed on the milling trade; the application of the latter provision has been postponed by decree of 7 January 1935 to 16 February 1935.

For the constitution of a guarantee stock and the purchase of freely offered wheat mainly held by the small farmers, the Government has placed itself in touch with more than one million growers who will be expected to supply 3,000,000 quintals. An equal quantity will be purchased from the co-operative societies that hold stocks. These purchases were initiated at the beginning of February 1935.

The *use of denaturated wheat as stock feed* was facilitated by the unfavourable result of the oats harvest. The denaturation premium was at first fixed, from 31 December 1934, at 45 fr. and, as the price of oats fell in consequence, later at 40 fr. (for the applications dating from 8 January 1935). It is hoped by denaturation to direct several million quintals toward the feeding of stock. During the month of January more than 2,000 applications for denaturation of wheat relating to more than 3,500,000 quintals have been addressed to the Ministry of Agriculture.

Exports of wheat are made within the limits of the Budapest agreements. From the beginning of the season up to the end of the month of January, it was possible thus to export 4,500,000 quintals. For exportation, a reimbursement of 70 frs. per quintal has been allowed. In all an export of 3,000,000 quintals of breadstuff wheat and 6,500,000 quintals of denaturated wheat is reckoned as probable.

H. BÖKER.

IMPORTANCE OF FARM ACCOUNTANCY FOR THE STUDY OF CERTAIN ECONOMIC PROBLEMS IN AGRICULTURE (*concluded*)

THE RELATIVE ADVANTAGE OF A BRANCH OF FARMING IN COUNTRIES WHERE DIFFERENT TYPES OF FARMING PREVAIL

It would not be practicable to make a scientific distribution of the net return among the different branches of farming; but, as it appears essential to form a precise idea of the importance of each crop, etc., there is sound reason for making the distribution of the net return in proportion to the importance of each branch of production. We shall thus obtain, with the reserve only of the extent of this proportion, the amount remaining to the grower after proportional distribution of the farming costs among the different branches of production. For convenience of expression we shall, although improperly, retain for these results the term "net returns." We shall thus assign, to each branch of production, the "net return" which falls to it according to its relative importance.

It is proposed to follow, over a certain number of years, the variations which have occurred in the net return of a certain size class, or of a certain region.

It will now be possible to know if any branch of production has given a "net return" larger or smaller than that of the previous year; to calculate the increase or diminution of the "net return" of each branch of production. Since there is no difficulty in ascertaining the increase or the diminution of the gross yield of each branch of production, there is nothing to prevent the calculation *by difference* of the increase from one year to another or the diminution

of the farming costs of each branch (1). It can, if desired, be ascertained if this increase or diminution is to be referred to the labour costs or to the other costs, such as seed, feeding stuffs, fertilisers, etc.

Thus all the factors are available enabling us to see what is the relative advantage (in the organic whole formed by the farm) of a given crop or branch of production. The tables on pp. 110-111 provide examples, and summarised results are shown in the statement below and in that on p. 112.

The highest "net returns."

Pig fattening	Dairy production	Stock breeding and arable farming
In 1928-29: Farms of less than 10 ha. . . " of 20 to 30 ha. . . " of 30 to 50 ha. . .	Farms of 10 to 20 ha. . . " of 50 to 100 ha. . .	Farms of more than 100 ha.
In 1929-30: Farms of less than 10 ha. . . " of 10 to 20 ha. . . " of 20 to 30 ha. . . " of 30 to 50 ha. . . " of 50 to 100 ha. . .	—	Farms of more than 100 ha.
In 1930-31: Farms of more than 100 ha.	Farms of less than 10 ha. . . " of 10 to 20 ha. . . " of 20 to 30 ha. . . " of 30 to 50 ha. . .	—

The "Net Returns" diminish as the area of the farm increase. An exception is constituted in 1928-29 by the farms of 20 to 30 ha. which stand above those the area of which is between 10 and 20 ha. because the pig fattening on the former was much more profitable than on the latter. In 1929-30, however, the farms of 20 to 30 ha. fall behind those of 10 to 20 ha. because the gross return from the dairy production of the farms of 20 to 30 ha. diminished

(1) The crops and the transformation activities on a farm are merely the organic parts of the farm, closely interlinked, so that it is impossible to separate, speaking from the economic standpoint, the results of any.

It is in the synthesis of all the separate accounts that is found the single figure which has an absolute and indisputable value: that which relates to the aggregate. On a farm the earning capacity of one branch affects that of another—it is an indivisible whole; and it is entirely logical to distribute, as proposed here, the net return, or the profit or loss on total farm assets, over the different branches of production proportionally to the importance of each of these. We have at the same time distributed in the same way the farming costs or the cost of production, and we can call the results thus obtained the "farming costs" or "cost of production" of each of the farm products, always taking into account the approximate character of these terms.

	Net return in gold francs				Of the gross return in	
	per ha.					
	Pigs	Milk and milk products	Other products	Total	Pigs	Milk and milk products
DENMARK:						
<i>Farms engaged in pig fattening and in dairying:</i>						
1928-29: farms of: (a) less than 10 ha. .	105.14	105.59	65.17	275.90	—	—
(b) from 20 to 30 ha. .	78.56	82.47	53.86	214.89	—	—
(c) from 10 to 20 ha. .	77.52	75.34	48.17	201.03	—	—
(d) from 30 to 50 ha. .	70.96	72.30	45.29	188.55	—	—
(e) from 50 to 100 ha. .	63.34	62.26	50.47	176.07	—	—
(f) over 100 ha. . . .	60.19	32.67	74.90	167.76	—	—
1929-30: farms of: (a) less than 10 ha. .	107.44	114.20	69.53	291.17	+ 31.74	+ 5.59
(c) from 10 to 20 ha. .	75.51	81.58	45.34	202.43	— 6.90	+ 43.01
(b) from 20 to 30 ha. .	68—	74.52	44.66	187.18	— 25.22	+ 2.80
(d) from 30 to 50 ha. .	58.30	60.79	34.81	153.90	— 18.00	— 9.68
(e) from 50 to 100 ha. .	47.56	48.47	34.30	130.33	— 19.39	— 8.30
(f) over 100 ha. . . .	40.64	25.99	42.90	109.53	— 13.85	+ 18.04
1930-31: farms of: (a) less than 10 ha. .	19.46	17.49	12.75	49.70	— 134.01	— 192.00
(c) from 10 to 20 ha. .	11.28	9.26	7.07	27.61	— 88.94	— 141.34
(b) from 20 to 30 ha. .	7.69	6.87	4.77	19.33	— 80.44	— 137.14
(d) from 30 to 50 ha. .	1.19	0.98	0.59	2.76	— 78.93	— 138.33
(e) from 50 to 100 ha. .	0	0	0	0	— 69.02	— 109.03
(f) over 100 ha. . . .	— 1.09	— 0.52	— 1.15	— 2.76	— 56.43	— 47.59

Increase (+) or decrease (—) as compared with 1928-29

gold francs per ha.		of farming costs in gold francs per ha.				of "net return" in gold fr. per ha.			
Other products	Total	Pigs	Milk and milk products	Other products	Total	Pigs	Milk and milk products	Other products	Total
—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—
— 66.32	— 28.99	+ 29.44	— 3.02	— 70.68	— 44.26	+ 2.30	+ 8.61	+ 4.36	+ 15.27
— 13.84	+ 22.27	— 4.89	+ 36.77	— 11.01	+ 20.87	— 2.01	+ 6.24	— 2.83	+ 1.40
— 12.16	— 34.58	— 14.66	+ 9.75	— 1.96	— 6.87	— 10.56	— 7.95	— 9.20	— 27.71
— 27.71	— 55.39	— 5.34	+ 1.83	— 17.23	— 20.74	— 12.66	— 11.51	— 10.48	— 34.65
— 38.79	— 66.48	— 3.61	+ 5.49	— 22.62	— 20.74	— 15.78	— 13.79	— 16.17	— 45.74
— 67.92	— 63.73	— 5.70	+ 24.72	— 35.92	+ 5.50	— 19.55	— 6.68	— 32.00	— 58.23
— 65.28	— 391.29	— 48.33	— 103.90	— 12.86	— 165.09	— 85.68	— 88.10	— 52.42	— 226.20
— 53.67	— 283.95	— 22.70	— 75.26	— 12.57	— 110.53	— 66.24	— 66.08	— 41.10	— 173.42
— 73.00	— 290.58	— 9.57	— 61.54	— 23.91	— 95.02	— 70.87	— 75.60	— 49.09	— 195.56
— 57.65	— 274.91	— 9.16	— 67.01	— 12.95	— 89.12	— 69.77	— 71.32	— 44.70	— 185.79
— 81.16	— 259.21	— 5.68	— 46.77	— 30.69	— 83.14	— 63.34	— 62.26	— 50.47	— 176.07
— 118.85	— 222.87	+ 4.85	— 14.40	— 42.80	— 52.35	— 61.28	— 33.19	— 76.05	— 170.52

considerably and because on the other hand the gross return of the farms of 10 to 20 ha. showed a large increase while the dairy production showed slight reductions.

The lowest "net returns."

Pig fattening	Dairy production	Stock breeding and arable farming
In 1928-29: Farms of more than 100 ha.	—	Farms of less than 10 ha. » of 10 to 20 ha. » of 20 to 30 ha. » of 30 to 50 ha. » of 50 to 100 ha.
In 1929-30: Farms of more than 100 ha.	—	Farms of less than 10 ha. » of 10 to 20 ha. » of 20 to 30 ha. » of 30 to 50 ha. » of 50 to 100 ha.
In 1930-31	—	Farms of less than 10 ha. » of 10 to 20 ha. » of 20 to 30 ha. » of 30 to 50 ha. » of more than 100 ha.

From 1928-29 to 1929-30, the "net return" of the dairy production and of the other branches of production showed more marked reductions than the "net return" of pig fattening. The net return of the pig fattening as a rule increases; the farming costs equally increase, but in a less degree. The farms showing the lowest "net return" of pig fattening are the farms from 30 to 50 and from 50 to 100 ha., because the gross return was somewhat lower, while the farming expenses slightly increased. On the farms of more than 100 hectares the net return of stock breeding and crops is seen to decrease in a much larger proportion than the net return of dairying and pig keeping, but as they are better equipped for succeeding in cropping and stock farming, the net return of their crops and live stock taken together remains higher than that of the pig fattening and of the dairying industry. It remains so in fact till 1930-31 when it is seen to fall lower.

In 1930-31, it is the dairying industry that gives the best results, except as related to farms of more than 100 ha.; here it is the net return of the pig keeping that falls lower than that of the other branches of production.

Proportionally, it is the net return of stock farming and of crops that shows the most decrease from 1928-29 to 1930-31; the gross return fell and the expenses remained very nearly what they were in 1929-30. A very heavy fall occurred in the gross return of pig fattening in 1930-31 as compared with that of 1928-29, the expenses also decreased but not enough, and the net re-

turn from the dairy industry shows the best results. The expenses of this latter branch of farming show a slight reduction, but the decrease in gross return is less marked than that of the return of pig fattening, so that the net return of this last branch of farming is slightly higher than that of pig keeping. An exception must be made, as already said, of the farms of more than 100 ha. where the net return of the dairying is much lower than that of the pig fattening; here the expenses of dairy production have increased.

In 1929-30 there was a general increase in the gross return from pig fattening, as already noted, while that from dairy production diminished. In 1930-31, on the contrary, the gross return from pig fattening showed much larger proportional decrease than the gross return from dairy production. These facts are fully explained by the price fluctuations. The following are the index-numbers of the prices in the respective years:

	1928-29	1929-30	1930-31
Pork	100	114	69
Milk and milk products	100	93	73

On p. 366 of the September 1934 number of the *Monthly Bulletin of Agricultural Economics and Sociology* of the Institute the following statement occurs in reference to Denmark: "In 1928-29 pig prices rose with the result that in 1929-1930 the import of porkers was multiplied *ten times*; this was an excessive importation and was followed by a slackening in the sales, and in 1930-31 there was a severe fall in market prices, and accordingly in the gross return from pig farming."

The incidence of increase or decrease in farming costs as compared with 1928-29 is shown below in gold francs per hectare (the sign + denoting increase and the sign — decrease).

	Total farming costs	Expenditure on stockfeeds	Labour costs	Other expenditure
(1) 1929-30:				
Farms of less than 10 ha.	— 44.26	— 59.58	— 4.11	+ 19.43
» of 10 to 20 ha.	+ 20.87	— 11.06	+ 11.12	+ 20.81
» of 20 to 30 ha.	— 6.87	— 20.78	+ 1.41	+ 15.32
» of 30 to 50 ha.	— 20.74	— 31.87	— 4.13	+ 15.26
» of 50 to 100 ha.	— 20.74	+ 5.57	+ 1.40	+ 27.71
» more than 100 ha.	— 5.50	— 22.18	+ 5.57	+ 11.11
(2) 1930-31:				
Farms of less than 10 ha.	— 165.09	— 126.98	— 30.67	— 7.44
» of 10 to 20 ha.	— 110.53	— 69.25	— 20.87	— 20.41
» of 20 to 30 ha.	— 95.02	— 70.48	— 19.40	— 5.14
» of 30 to 50 ha.	— 89.12	— 67.57	— 16.50	— 5.05
» of 50 to 100 ha.	— 83.14	— 63.16	— 14.96	— 5.03
» more than 100 ha.	— 52.35	— 50.40	+ 1.73	— 3.68

			" Net Return "				of the gross return	
			in gold fr. per ha.					
			Sugarbeet	Cereals	Other branches	Total	Sugarbeet	Cereals
GERMANY :								
Farms growing sugar beet:								
1928-29:	(a)	West and South 5 to 20 ha.	23.16	34.57	94.17	151.90	—	—
	(b)	East 5 to 50 ha.	23.42	30.04	94.73	148.19	—	—
	(c)	West and South 20 to 100 ha.	18.81	32.40	55.00	106.21	—	—
	(d)	. . . . . more than 100 ha.	19.79	35.91	43.10	98.80	—	—
	(e)	East 50 to 200 ha.	16.08	26.09	39.34	81.51	—	—
	(f)	. . . . . more than 200 ha.	9.74	18.14	23.99	51.87	—	—
1929-30:	(e)	East 50 to 200 ha.	21.55	29.13	39.71	90.39	+ 32.63	— 0.54
	(b)	. . . . . 5 to 50 ha.	14.89	16.08	49.51	80.48	+ 11.52	— 16.86
	(a)	West and South 5 to 20 ha.	9.44	17.10	44.04	70.58	— 12.00	— 1.89
	(d)	. . . . . more than 100 ha.	11.91	19.25	23.33	54.49	+ 0.52	— 42.38
	(c)	. . . . . 20 to 100 ha.	9.88	14.18	29.18	53.24	— 9.45	— 62.35
	(f)	East more than 200 ha.	10.23	15.24	17.87	43.34	+ 27.63	— 14.14
1930-31:	(a)	West and South 5 to 20 ha.	21.48	39.34	74.29	135.11	— 15.54	+ 19.68
	(c)	. . . . . 20 to 100 ha.	19.78	33.73	44.75	98.26	— 4.64	— 10.22
	(b)	East 5 to 50 ha.	11.24	16.36	42.41	70.01	— 21.64	— 8.35
	(e)	. . . . . 50 to 200 ha.	11.90	19.75	24.85	56.50	— 11.94	— 16.18
	(d)	West and South more than 100 ha.	12.27	22.54	21.69	56.50	— 19.50	— 31.43
	(f)	East more than 200 ha.	3.16	6.28	6.53	15.97	— 19.22	— 14.99

Increase (+) and decrease (—) as compared with 1928-29

(in gold francs per ha.)		net return (in gold francs per ha.)				farming costs (in gold francs per ha.)			
Other branches	Total	Sugarbeet	Cereals	Other branches	Total	Sugarbeet	Cereals	Other branches	Total
—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—
— 39.80	— 7.71	+ 27.16	— 3.58	— 40.17	— 16.59	+ 5.47	+ 3.04	+ 0.37	+ 8.88
— 61.65	— 66.99	+ 20.05	— 2.90	— 16.43	+ 0.72	— 8.53	— 13.96	— 45.22	— 67.71
— 46.69	— 60.58	+ 1.72	+ 15.58	+ 3.44	+ 20.74	— 13.72	— 17.47	— 50.13	— 81.32
— 45.91	— 87.77	+ 8.40	— 25.72	— 26.14	— 43.46	— 7.88	— 16.66	— 19.77	— 44.31
— 20.94	— 92.74	+ 0.48	— 44.13	+ 3.88	— 39.77	— 9.93	— 18.22	— 24.82	— 52.97
— 57.24	— 43.75	+ 27.14	— 11.24	— 51.12	— 35.22	+ 0.49	— 2.90	— 6.12	— 8.53
— 144.51	— 140.37	— 13.86	+ 14.91	— 124.63	— 123.58	— 1.68	+ 4.77	— 19.88	— 16.79
— 126.83	— 141.69	— 5.61	— 11.55	— 116.58	— 133.74	+ 0.97	+ 1.33	— 10.25	— 7.95
— 118.54	— 148.53	— 9.46	+ 5.33	— 66.22	— 70.35	— 12.18	— 13.68	— 52.32	— 78.18
— 85.70	— 113.82	— 7.76	— 9.84	— 71.21	— 88.81	— 4.18	— 6.34	— 14.49	— 25.01
— 115.36	— 166.29	— 11.98	— 18.06	— 93.95	— 123.99	— 7.52	— 13.37	— 21.41	— 42.30
— 97.77	— 131.98	— 12.64	— 3.13	— 80.31	— 96.08	— 6.58	— 11.86	— 17.46	— 35.90

We see that in 1929-30 the increase occurs in the labour costs and especially in the miscellaneous expenses, but that the decrease in expenditure on stock feeds is considerable enough to lower the total farming costs, except for the farms of from 10 to 20 hectares where the farming costs increase.

In 1930-31 the labour costs show an increase as compared with those of 1928-29 only on the farms of more than 100 ha.; as compared with the 1929-1930 costs there is a slight decrease. The other costs are somewhat lower than those of 1928-29, but the expenditure on stock feeds is much lower, and it is this decrease which accounts for the marked decrease in farming costs already noted, a decrease which is very largely connected with the pig fattening.

In 1928-29, the small farms of the West and of the East of Germany have been more remunerative than the large farms. Then come the medium-sized and large farms of the West and in the last place the medium-sized and large farms of the East. In proportion as the area increases, a decrease in the total net return is noted, as also in the net return of the sugar beet cultivation, that of cereal growing and of the other branches. The net return on sugar beet growing is about one sixth of the total net yield. It will be found that this proportion remains unchanged during the three years under review.

In 1929-30 it is the farms of from 50 to 200 hectares of the East which stand first; they succeeded in improving all their net returns, especially the net return on sugar beet growing. In 1930-31 it is found that these farms do not maintain their leading place but fall back into the fourth place. The farms of from 5 to 20 and from 20 to 100 ha. of the West show a marked advance and take the first and second place. In this way the small family farms and the medium-sized farms of the West and South come out first: then follow the family farms and the medium-sized farms of the East: then, the large farms of the West and finally the large farms of the East. This is practically a return to the situation of 1928-29.

From 1928 to 1929, the farms of the East of Germany succeeded in increasing by as much as from 10 to 33 gold francs the gross return on sugar beet growing, but to do so they had to increase farming costs; the net return however on sugar beet growing was a little higher than that obtained, for the same branch of farming, on the farms of the West and South, which scarcely increased or did not at all increase expenditure in connection with sugar beet growing. It was only the farms of more than 100 ha. which, among the farms of the West, increased by 8 gold francs the cultivation costs of sugar beet; the gross return of this branch increased only by 0.52 gold francs per ha. and these farms were in almost as unfavourable a position as the two other groups of farms of the West and South.

In 1930-31 the farms of 5 to 20 ha. and of 20 to 100 ha. of the West made an advance; the former were able to effect an increase as compared with 1928-29 in the gross return of cereal growing and to decrease the farming costs of sugar beet and especially the costs of stock farming; the improved position of the latter is due to the fact that the decrease in the gross return from sugar beet is only half that of 1929-30, that the farming costs of this crop decrease to the same extent and that the gross return from cereal growing is much better

than in 1929-30. The farms of the East take a lower place because the gross return on sugar beet, which had increased in 1929-30, was considerably lower in 1930-31, while costs did not diminish in the same proportion.

The farms of more than 100 hectares of the West and South remain at the same level as in 1929-30.

From 1928-29 to 1930-31, the profit capacity of sugar beet and of cereals has thus been more stable in the West and South than in the East of Germany. Farms of 5 to 20 and 20 to 100 ha. in the West and South improved in 1930-1931 the earning capacity of the live stock farming; in the East, the position of stock farming became more precarious.

This enquiry has not been pursued further, the object being to show that results of great interest may be obtained from our figures which will not be found otherwise. On the other hand, in order make a complete enquiry, and to base conclusions on thoroughly solid bases, it would be essential to possess accountancy results extending over more than a three year period, in fact over five to ten years at least.

JOSEPH DESLARZES.

AGRICULTURAL CO-OPERATION IN AUSTRIA (*Concluded*).

§ 9. CO-OPERATIVE MARKETING SOCIETIES FOR PURCHASE AND SALE.

In the course of the development of co-operation in Austria, there has been a gradual abandonment of the principle of forming general co-operative societies embracing all the manifold activities of farming. Although the administrative expenses of co-operative societies are more easily met by societies of a comprehensive character and although, on the other hand, it is difficult to find in the country an adequate number of expert co-operators, the tendency to differentiation in agricultural co-operation is gaining ground all the time. Hence while for the Raiffeisen banks the trade in agricultural products plays a subordinate part and for the dairy and stock farming societies it is limited mainly to the products handled by these societies, joint trade transactions are carried out in the first place by co-operative marketing societies for purchase and sale.

According to their rules, the economic task of these societies is defined as follows: the object of the society is to purchase commodities required on the farms of members, especially the actual farming requisites, machines, implements, seeds, fertilisers, etc., and to assign them to members against an equivalent; to transform and to sell on commission, and at the cost of its members, their agricultural products, such as cereals, hay, potatoes, etc. These societies endeavour to obtain the best prices for the commodities sold, and in respect of the commodities purchased a guarantee of quality and reasonable prices. The society buys the members' products at fixed prices, but if the resale is effected under favourable conditions, a supplementary payment is made to the grower.

Every member is expected to hold at the disposal of the society and to consign to it, in accordance with the quantities and qualities laid down in the rules, and at the proper time and unadulterated in any way, the products which in virtue of a special agreement are to be delivered by him to the society for storage, transformation or sale. The principle of payment on account to the members must be strictly observed by the co-operative society.

With a view to securing a greater degree of economic effectiveness on the market, these co-operative societies have been grouped into central marketing associations, such as the Lower Austrian Federation of Agricultural Co-operative Societies which is by far the most important; the Styrian Farmers' Union; the Vorarlberg Federation of Agricultural Co-operative Societies, and the similar Federations of the Tyrol, Carinthia and Burgenland. In Upper Austria, the co-operative societies for purchase and sale are affiliated to the Agency for trade in agricultural commodities attached to the *Landeskulturrat* of Upper Austria, while at Salzburg the sole organisation is the Farm Marketing Office of the Salzburg *Landeskulturrat* with no co-operative societies attached. The idea seems to be gaining ground by degrees of the future formation of a single central co-operative organisation over the whole country for co-operative purchase and sale, as has already been done for co-operative finance.

At the end of last century the first co-operative grain warehouses in Austria were founded; at the present time they form the most important link in the whole organisation for the marketing of cereals. The co-operative grain warehouses form the connecting link between the farmer, who is partly the grower (or seller) and partly the consumer (buyer), and the Federation in its role of purchaser of farm requisites and seller of farm products. These organisations have the twofold function of storehouses and distributing centres. The larger number of these are found in Lower Austria where, on 1 January 1934, there were 59 out of a total of 124 co-operative societies, and where at the present time they undertake nearly all the marketing of farm products and the purchase of farm requisites.

By the foundation of the warehousing co-operative societies the middleman trade in cereals has almost entirely disappeared in Lower Austria. The majority of the farmers now consign their grain to these societies which transfer it subsequently to the Federation of Agricultural Co-operative Societies at Vienna. The influential position which this Federation holds on the Products Exchange enables it to treat directly with the consumer and thus to eliminate intermediary trade.

Owing to its continuous representation on the Exchange, the Federation is always completely cognisant of the market situation and is able to keep the co-operative societies informed of market prices. As the farmers organised in these societies deliver their products through the societies and Federations, very considerable sales of the different farm products can take place with a corresponding influence on the formation of cereal prices.

The agricultural organisation in the different Federal provinces is already sufficiently developed to be almost completely capable of also carrying on the sale of other farm products.

In addition to the activity in this respect of the Lower Austrian Federation of Agricultural Co-operative Societies, founded in 1898 with headquarters at Vienna, which represents the central trading organisation of the co-operative warehousing societies of Lower Austria, the co-operative trade in cereals is mainly carried out also by the Agency for trade in agricultural commodities of the *Kulturrat* of Upper Austria at Linz, founded in 1928. Both of these organisations purchase and sell at fixed prices and in some cases only on commission. The member co-operative societies are not, it is true, expected to supply their cereals to these two organisations but they do so voluntarily in their own interest. Long term contracts are not entered on.

The Lower Austrian Federation of Agricultural Co-operative Societies is the largest co-operative organisation for trading in commodities that exists in Austrian agriculture. In 1933 the membership was 129 with 78,923 shares fully paid up. The statutory liability of the members was twenty times their paid up shares, the total liability amounting to 1,578,460 schilling.

Apart from the Lower Austrian Chamber of Agriculture the Federation includes: 54 co-operative warehousing societies, four co-operative dairies, 13 co-operative distilleries, two co-operative wine making societies, and 34 various agricultural co-operative societies. In the trading year 1933 the Federation received from the member co-operative societies 18,017 truck loads of farm products, while the societies received from it 22,093 loads of farm requisites, a total turnover accordingly of 40,110 truck loads. As compared with 1932 there was an increased turnover of 9,237, or 30.7 per cent., due mainly to a larger supply of cereals. Reckoned per truck the administration expenses were 22.25 schilling compared with 30.41 in the previous year.

The policy for maintaining rye prices, carried out recently by the Federation in agreement with the Provincial Government, the Lower Austrian Chamber of Agriculture and the Lower Austrian Central Co-operative Bank, illustrates the strength and the economic resources of the Federation and of the co-operative warehousing societies belonging to it. The fact that the Federation handled in 1933 more than 40,000 loads of farm products and farm requisites is in itself a proof of the considerable range of its trading activity, amounting as it does to 3,300 loads per month or more than 100 per day. Of importance also is the fact that all transactions with the commodity Federations and with organisations of the other provinces are carried out by the Federation.

The following are the comparative figures of the prices of agricultural commodities in the prewar period (1913) and in 1933 (expressed in schilling per 100 kg.):

Kind of cereal	1913	1933
Wheat	35.40	34.00
Rye	27.25	18.60
Barley	26.50	20.50
Oats	27.40	18.60

Cereal prices are thus generally lower in 1933 than before the war. According to an investigation made by the League of Nations (*World Economic Survey*, 1932-33, p. 57, Geneva 1933), the prices of agricultural products in Austria, expressed in gold prices, fell by 27.1 per cent. from 1929 to 1933, while in other European States the percentage decline was much larger. The fall in the purchasing power of Austrian agriculture is due, *inter alia*, to the fact that the price of wheat, for example, in 1933 was 96 per cent. of the price in 1913. The price of milk was 97 per cent., that of cows 62 per cent., of pigs 88 per cent., of wine 80 per cent., etc., so that about 70 per cent. of the pre-war price may be reckoned as the present day proceeds of all that the farmer produces. On the other hand however the prices of the commodities he is obliged to purchase have greatly increased in comparison with 1913. For example, the cost of a scythe is 183 per cent. of the pre-war price, a harrow 139 per cent., a reaping hook 170 per cent., salt for live stock 231 per cent., etc., the general average of increase being at least 140 to 150 per cent., which shows that the exchange value of agricultural production is half the previous value. The problem of the divergence between prices of farm products and factory products thus has a very marked influence also on the commercial transactions of the co-operative societies for purchase and sale.

With a view to the special encouragement of the purchase of the requisites of Austrian agriculture, the Federal Government of Austria in 1924 instructed the General Federation of Agricultural Co-operative Societies to make the purchases of chemical fertilisers, purchases financed at a very reduced rate of interest by means of credits assigned to Austria by the League of Nations. In this way the individual farmers obtained favourable terms through their co-operative societies which in their turn procured fertilisers, seeds, etc., from the Federations of the provinces in which the societies were situated. The General Federation succeeded in obtaining out of this credit for the first year 8,000,000 schilling for this purpose, for the second year 7,000,000 schilling and for the third year (1926) 3,500,000 schilling. In consequence, agriculture has benefited in the form of credits for purchase of fertilisers by 18,500,000 schilling. "If at the present time we are able," to quote the Report of the General Federation of Agricultural Co-operative Societies for 1929-30, "to obtain such high returns in agriculture, the policy of using the funds from the League of Nations credit for chemical fertilisers has largely contributed to this result."

These subsidised purchases of fertilisers were continued after 1929 but were no longer financed out of the League of Nations credit but instead from budget allocations, while the financing of the purchases of commodities of the provincial Federations was effected, as each case arose, by the funds of the Central Clearing Bank. The Austrian consumption of chemical fertilisers was in 1933 about 110,000 tons of an approximate value of 18,000,000 schilling as compared with about 120,000 tons in 1932, the components being 72,378 tons of phosphoric acid, 23,646 tons of nitrogenous fertiliser, and 13,565 tons of potash.

The total business done in the different provincial Federations of co-operative societies in the years 1928, 1931 and 1932 is shown by the following statistics.

Commercial Transactions of the Co-operative Federations in the years 1928-1932 (Expressed in truckloads of 10,000 kg.)

Central Commodity Federations	Years	Cereals and feed grains	Potatoes	Hay and straw	Chemical fertilisers	Cereal seeds etc.	Other items, machines, concentrated feeds	Total
1. — Lower Austrian Federation of Agricultural Co-operative Societies.	1928 1931 1932	7,814 13,623 16,620	1,042 1,677 1,689	724 2,663 2,353	4,612 4,317 4,177	60 236 39	5,937 7,507 5,995	20,189 30,023 30,873
2. — Farmers' Federation of Styria.	1928 1931 1932	584 1,714 2,288	22 13 —	80 77 680	592 566 316	176 216 168	396 243 752	1,850 2,831 4,204
3. — Federation of Co-operative Societies of Vorarlberg.	1928 1931 1932	381 997 688	78 (1929) — —	46 95 55	350 214 164	14 215 4	762 445 464	1,553 1,996 1,375
4. — Federation of Co-operative Societies of Tyrol.	1928 1931 1932	352 437 364	8 — —	225 (1929) 238 178	321 469 311	22 11 16	9 (1929) 17 2	703 1,172 871
5. — Federation of Agricultural Co-operative Societies of Carinthia.	1928 1931 1932	188 887 1,001	— — —	90 96 124	328 356 242	— — —	38 32 246	644 1,371 1,613
5. — Federation of Agricultural Co-operative Societies of Burgenland.	1928 1931 1932	12 162 560	— — —	— 76 54	198 121 186	— 11 —	31 261 202	210 631 1,005

The largest volume of business was that done by the Lower Austrian Federation of Agricultural Co-operative Societies; then follow in order of importance the Federations of Styria, Vorarlberg, Tyrol, Carinthia and Burgenland. The relatively large purchases in requisites of production made by the Federations represent large orders for manufacturers in the agricultural industries of concentrated feeds, machinery or chemical fertilisers and other chemical products, which thus obtain a guaranteed demand for high quality products. The economic bond between town and country tends thus to be more closely drawn as a consequence of the intervention of the co-operative system, and the prospects of eliminating unnecessary intermediaries become more encouraging.

§ 10. MISCELLANEOUS AGRICULTURAL CO-OPERATIVE SOCIETIES.

The remaining co-operative societies, which are so organised as to be partly co-operative societies of production and partly societies for sale, can be briefly treated only for reasons of space. These societies for the most part confine their activity to a relatively narrow section of agricultural enterprise, although their influence may be sometimes very considerable. Some of these may be quoted as examples.

(a) *Co-operative Societies for Purchase of Farm-Machines.* — The function of these societies consists in the joint purchase of farm machines and implements for the use of members against payment of a fixed charge for the period for which they are needed, separate purchases of machinery being naturally impossible for the small farms. According to the agricultural census of 1930 there are in Austria 291,769 farms, or 67 per cent. of the total number, which own farm machinery. This is a fairly high percentage for Austria, where only a small part of the total area is plainland, and where consequently the use of machines for working the land is somewhat limited.

The following figures taken from the agricultural census show the number of farms using their own machinery, borrowed machinery or machinery jointly utilised:

Number of farms using machines	Seed-Drills	Reapers	Threshers	Graders for cereals	Chaff Straw- cutters	Grinders and crushers	Centrifugal separators
1. — Owned . . .	25,572	21,869	113,404	18,290	227,428	58,886	130,148
2. — Borrowed . .	7,612	467	30,305	5,260	1,897	847	728
3. — Used in com- mon . . .	8,908	1,818	26,950	13,182	1,857	2,236	465

The machines most generally employed in common are the most costly, namely, the threshing machines, on 26,950 farms; graders for cereals are in joint use on 13,182 farms; seed-drills on 8,908 farms; grinders are in joint use on 2,236

farms, reapers on 1,818 and separators on only 465 farms. These figures relate to the joint utilisation of farm machinery which will coincide probably frequently, although not always, with the co-operative utilisation.

(b) *Co-operative Societies for Land Improvement.* — In the course of the years 1857 to 1914 land improvement operations were carried out on 28,000 hectares, distributed through 396 communes in Lower Austria, and were almost exclusively co-operative undertakings. These operations were brought to a standstill by the war, but from 1920 onwards the work was resumed with the financial support of the Federal Government. In the last ten years a total area of 11,600 hectares has been improved, and in the years 1931 and 1932 alone land drainage work has been effected, in 1931 on a total area of 5,364 hectares, including 2,012 hectares drained by co-operative societies, and in 1932 on 2,237 hectares, including 917 drained by co-operative societies.

(c) *Co-operative Distilleries.* — The object of this type of co-operative society is the transformation of products grown on members' farms, in particular potatoes, into alcohol in farm distilleries managed by the societies themselves, and its sale. The potato residues obtained in the course of the process, which represent an excellent stock feed, are sold cheaply to the farmers belonging to the co-operative society, enabling them to keep larger numbers of animals.

Among the 1,498 farm distilleries of alcohol of former Austria, 1,482 were situated in the territory now forming part of Czechoslovakia and Poland. During the war years the manufacture of alcohol was prohibited in the farm distilleries, as using potatoes and cereals as raw materials. During the first distilling season that followed the conclusion of the war, 1919-20, three farm distilleries resumed work with an output of 80 hectolitres only of alcohol. In 1924 the number of distilleries rose to 19, and in the same year the Federation of farm distilleries of Austria was founded, and was joined by all the existing distilleries. The greater number of the co-operative distilleries were founded after 1926. This was made possible by the law on alcohol enacted on 23 September 1926, in which it was established that every co-operative distillery should have the right to manufacture for each distilling season a total quantity of 1,600 hectolitres of alcohol. In 1927-28 the number of new co-operative distilleries founded was 12, the number being limited simply because the Government had fixed a quota in respect of the total quantity to be distilled.

The proportionate share of agriculture in the total production of alcohol rose from one per cent. before the war to 28 per cent. in recent years. In accordance with this percentage the quota assigned to agriculture during the distilling season of 1932-33 was 56,000 hectolitres of alcohol divided between 61 farm distilleries. The maximum output of the distilleries was 71,785 hectolitres in 1930, a quantity which subsequently fell somewhat lower.

(d) *Co-operative Wine-making Societies.* — These societies take charge of their members' grape harvest and wine and arrange for the direct sale of these products to consumers. The delivery is obligatory on the part of the members,

and they receive for their grapes payment on account up to 75 per cent. The greater part of these co-operative societies, especially those which were founded before the war and which have made large capital investments, are on a basis of unlimited liability. The larger number are to be found in Tyrol.

(e) *Co-operative Fruit-marketing Societies.* — The development of these societies is still in an initial stage. There are five in Lower Austria and one in each of the provinces of Burgenland, Styria and the Tyrol. Austria has in addition large areas especially suitable to fruit cultivation. At present the marketing question is also a pressing one in these regions, for the country cannot itself consume the whole yield of a good crop and, in consequence recourse must be had to exportation. For a certain number of years the competent authorities and organisations, among which are also the fruit-growing unions, are endeavouring to take all measures required for a regulated marketing of fruit.

In the autumn of 1934, the Federal Ministry of Agriculture and Forests, set up at Munchendorf near Vienna the Austrian Society for Fruit Valorisation, the object of which was the transformation, in accordance with the process used by the similar co-operative society at Bischofszell in Switzerland, of fruit juice into alcohol-free cider, and if required also the exportation of fruits. This society possesses interest from the fact that a number of agricultural organisations have taken part in its foundation, including the Lower Austrian Chamber of Agriculture, the Central of the agricultural co-operative societies of Lower Austria and the Swiss Co-operative Society for valorisation of fruits at Bischofszell, and on the other hand, the Wholesale Company of Austrian Consumers' societies. At the end of 1934 the society had already produced 1,500,000 litres of alcohol-free cider.

Export of fruit from Austria has developed in these last few years as follows:

	Quantity	Value
1930	477,450 quintals	19,137,000 schilling
1931	54,933 "	3,282,000 "
1932	672,864 "	13,974,000 "
1933	105,527 "	3,267,000 "

As compared with the 1930 export, that of 1933 represents less than one fourth in volume and hardly one sixth in value.

(f) *Egg Marketing Co-operative Societies.* — The egg marketing societies are grouped into a central co-operative society for marketing of eggs and of poultry which undertakes the improvement of production and the marketing of the eggs. In addition to a whole series of co-operative dairies, there are in the first place three large central organisations which undertake to collect the eggs: the Lower Austrian Dairy Federation, the Central Co-operative for Sale of First quality butter (*Erste Zentrale Teebuttermarketing Genossenschaft*) at Schärding on Inn and the Agricultural Federation of Co-operative Dairy Societies in Lower Austria.

The production of eggs in Austria is following a similar course to that followed some years ago by dairying. It is becoming a considerable source of income to the farmers. Of the whole numbers of Austrian farms 89.7 per cent., or 388,724 farms, undertake poultry keeping. For the breeding there are special farms, and large poultry breeding farms have come into existence since the war. These contain 16 per cent. of all the head of poultry, the remaining 84 per cent. being found on the small farms. The import of poultry and eggs is mainly from Hungary, Yugoslavia, Poland, etc., and has shown a tendency to increase although the value of this import has steadily fallen in volume (especially in regard to poultry) as appears from the following figures (value in schilling):—

1928.	65,713,000
1929.	65,251,000
1930.	61,941,000
1931.	51,119,000
1932.	35,498,000
1933.	31,421,000

The conditions of the market for eggs in Austria had not been fully regulated up to now. The national and foreign supplies were made on no fixed plan and merely followed the seasonal production without taking into account requirements of consumption, supply and demand, and in consequence the price was subject to very great fluctuations.

The Federal Ministry of Agriculture issued on 7 August 1934 new provisions in respect of the import of eggs, in accordance with which, beginning with the second quarter of 1935, there will be a special assignment of foreign quotas for egg imports. This assignment will be based on the volume of the purchases of national fresh eggs actually made on the Exchange of Farm Products at Vienna. It is with the help of these home purchases which can take place only through the intermediary of the Egg Exchange that the "National Scale" is reckoned. The national scale holding good for the period from 1 April 1935 to 31 May 1936 is established on the basis of the national purchases made from 1 July to 31 December 1934.

(g) *Co-operative Society for the Utilisation of Resin Products.* — This society was founded at Plesting in 1909. It is equipped with the most modern machinery and undertakes the manufacture of resin and of turpentine oils which can compete with the finest varieties in the world market. The output has now increased from 22 truck loads in 1909 to 500 of crude resin per year, a volume which at present covers at least 60 per cent. of the Austrian demand for resin and nearly 100 per cent. of the demand for turpentine. This co-operative society is the only one of its type in all Central Europe, as it is only in the region concerned—the black pine forests to the south of Vienna—that the species of pine grows from which the resin is obtained.

§ 11. DIRECT ECONOMIC RELATIONS BETWEEN THE AGRICULTURAL CO-OPERATIVE SOCIETIES AND THE CONSUMERS' CO-OPERATIVE SOCIETIES.

In the course of this study of the economic activity of the agricultural co-operative societies it has been several times noted that the Austrian co-operative associations are trying to eliminate, in respect of the trade in agricultural products, as much as possible the superfluous intermediary transactions and to bring their products directly to the consumer. In this way it becomes possible not merely to obtain remunerative prices for the growers and for the consumers and to achieve a certain stability of these prices, but also better to adapt agricultural production to the urban market. In this connection, the co-operative society goes beyond the narrow limits of actual farming interests and pursues an economic object of a higher kind, taking an intimate part in the whole national economy. To quote M. Augé-Laribé, Secretary General of the *Confédération agricole française*: "In order that co-operation may make good all its promises, it is not enough that it should be a collection of individual interests, engaged in entrenching themselves within their own circle of ideas, it is essential that it should cherish, not only the corporative, but the co-operative spirit, that is to say, the ideas of solidarity and of the general interest." (*Syndicats et coopératives agricoles*. Paris, 1926, pp. 202-203.) The difficulty of realising this ideal is equalled only by its nobility.

The beginnings of a closer bond between Austrian producers and consumers may be found in the early post-war years. With the collaboration of the then existent State Offices for national food supply, agriculture and finance, there was founded at the end of 1918 a special company for the sale of commodities to meet the requirements of town and country (*Warenverkehrsstelle zur Deckung des Bedarfs von Stadt und Land*) which was intended to act as intermediary between the rural population grouped in co-operative societies, and the working class. Its function was mainly to supply the rural population with manufactured goods as reasonably as possible and at the same time to supply foodstuffs more intensively to the towns, making use for both purposes of its connection with the Wholesale Company for Austrian Consumers' Unions, founded in 1905, and also with certain private enterprises. In August 1920, the Austrian Federal Government, the Wholesale Company referred to and the "Ara" Company for the trade in farm requisites, became the principal shareholders of the *Warenverkehrsstelle*. This organisation engaged in home and foreign trade, and established branches at Graz, Linz and Salzburg. In 1923 the balance sheet total was 1,500,000 gold crowns. No great prosperity attended the enterprise, a fact for which not the least important reason was the opposition between the two classes of population, rural and urban, with their divergent mentalities and social ideals. At the same time, as already noted (§ 5) in consequence of the inflation, the agricultural co-operative societies lost much of their influence among the farming population, which was driven to depend instead upon private dealers, until finally in the summer of 1924 the deflation brought the farming classes back to their co-operative societies.

Meanwhile the food problem had become less acute, the cost of living had somewhat diminished, and the whole movement for closer contact between town and country advanced no further, although direct purchases took place sporadically between consumers' co-operative societies and agricultural co-operative societies.

Since the oncoming of the economic crisis, further attempts have been made to revive, by means of trading contacts, the connection between the two groups of co-operative societies. In addition to the activity of this kind displayed by the co-operative dairies, the co-operative stock farming societies and by those for purchase and sale, as already noted in the foregoing sections, mention may be made here of some other facts of the same nature which better illustrate the present tendency to bring about closer trading relations between the farmers' and the consumers' organisations, with a view to the elimination of intermediaries. It will of course be understood that co-operating farmers have no intention, either in Austria or anywhere else, of completely eliminating intermediary trading, which must, on the contrary, remain, so far as it is economically justified, at the basis of all circulation and of all distribution of agricultural products. They desire only to get rid of the unhealthy forms of trading which are prejudicial not only to agriculture but to the whole national economy.

In 1930 the interco-operative Committee was formed at Vienna, including as members the following organisations: the General Federation of Agricultural Co-operative Societies of Austria, the Central Federation of Austrian Consumers' Societies and the Wholesale Company of Austrian Consumers' Unions. The Committee consists of ten members, five for the agricultural and five for the consumers' co-operative societies. The functions of President of the Committee are exercised alternately by a representative of the General Federation of Austrian Co-operative Societies and one of the Central Federation of Consumers' Societies. The Committee meet every time that the economic circumstances make a mutual understanding necessary, or that difficulties arise in the course of discussion of business between the two groups concerned, or whenever it is necessary that these groups should come to an agreement on questions of a legislative, economic or administrative kind. The Committee is a member of the International Committee of Interco-operative Relations, formed on joint initiative of the International Co-operative Alliance and of the International Committee of Agriculture, the object of which is to promote the development of moral and economic relations between agricultural co-operative societies and consumers' societies in the different countries. At the meetings of the International Committee the International Institute of Agriculture and the International Labour Office are also represented.

Some progress is also being made as to the direct supplies in farm products made by the rural co-operative societies to public corporations and institutions. In spite of the Ordinance of 26 October 1933 which was a general prohibition of supplies of this kind to industrial co-operative societies, the agricultural societies were not affected by the commercial restrictions prescribed. The prohibition, in fact, does not apply to cases in which the sale is intended to meet the requirements in farming requisites, or to those where the object of the society is the production to the sale of commodities and where the sale is confined within the scope of this co-operative object.

The attitude of farmers to the consumers' co-operative societies may be characterised by the following fact: at the plenary meeting of the Lower Austrian Chamber of Agriculture held towards the end of 1933, at which the measures taken by the Government against the consumers' societies were examined, the former Minister, M. Buchinger, declared that the limitation of the sphere of action of the consumers' co-operative societies, as well as the attempt made to prevent these societies from accepting new members, was directed against the interests of agricultural co-operation itself, since the consumers' co-operative societies—which moreover had for years past aspired to have good relations with the agricultural co-operative societies—are the best and most reliable customers of these latter.

This is a very interesting avowal coming from agricultural co-operative circles. It may be that it points to a new more important phase in the reciprocal relations of the two types of co-operative societies, one in which the object is to balance so far as possible supply and demand, and thus to introduce into the whole of Austrian economy an element of planning. The further economic life advances towards a planned system, and the wider, in consequence, is the State intervention in production and price formation, the more necessary will become an understanding between the co-operative societies for rural production and those for urban consumption in order that they may take an active share in this development.

Such is the great social task reserved, for the welfare of all, to the co-operative organisations of Austria.

M. TCHERKINSKY.

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[This lecture includes in the first place a very brief historical introduction on the social conditions of the agricultural classes before the advent of the Fascist regime.

This is followed by an extremely clear and systematic statement of the syndical corporative organisation of agriculture (masters, farm workers and technicians). The harmonious working of the syndicates, and of the National Federations, Confederations and Provincial Unions depending on these, is explained. Some account is also given of the Corporations which group the representatives of the categories concerned in the cycle of production, transformation and distribution of products. These bodies complete the economic and social edifice of the organisation of production and labour in Italy, with special relation to agriculture].

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[In the course of 1934 the 14th edition appeared of this valuable publication which has been issued for a number of years by the Associazione fra le Società Italiane. The first ten issues had been published by the "Credito Italiano" bank.

As with the previous volumes, this one covers all the Italian societies operating in Italy and in the Italian Colonies with at least 1,000,000 liras of nominal capital, and all the affiliated societies even if they have less than 1,000,000 liras of capital.

The figures and information contained in the 1934 edition, which extends to 2 + 487 pages, refer to the balance sheets closed up to 31 March 1934, and have been obtained directly, or from official publications or documents. The societies reviewed in this volume include 4,217 share companies with headquarters in the Kingdom with 44,218,489,018 liras of nominal capital; 40 co-operative societies with 274,284,738 liras of paid up capital; 41 societies with headquarters in the Colonies with 180,065,000 liras of nominal capital; 19 miscellaneous institutions].

The Indian Co-operative Review. Vol. I, No. 1. January 1935. Published by V. Ramadas Pantulu, Mylapore, Madras.

[The All-India Co-operative Institutes' Association, of which this Review is to be the organ, was formed in 1929 for the purpose of stimulating what may be termed the unofficial aspect of the co-operative movement in India. The co-operative system in the provinces of British India is regulated by the Co-operative Societies' Act of 1912, which empowered the Government of each province to appoint a Registrar for registration, audit and the liquidation of societies. Credit and banking facilities are obtained from the Provincial and Central Banks.

The valuable constructive work of the Registrars and their officers is, however, supplemented by the non-official action of provincial Institutes and Unions, which consists in local propaganda and advisory work for the promotion and diffusion of co-operation, more especially among the largely illiterate village populations of each province. The foundation of the All-India Co-operative Institutes' Association has been a step towards the strengthening of this side of the work, and the significance of the new departure was recognised in 1931 by the Report of the Indian Central Banking Enquiry Committee, which recommended that the Co-operative Societies' Act should be amended so as to provide for registration of the Association.

It will accordingly be seen that the publication of a quarterly journal as an organ of the Association — actually the outcome of a resolution passed by the Conference held at Hyderabad in 1931—may be regarded as a landmark in the development of co-operation in India. The intention is to provide thereby a medium for the publication of articles on co-operation that should be of interest to the whole of India, and even to a wider public, while in addition space will be given to notes on co-operative legislation, experiments and activities in other countries. It is proposed at the same time to maintain close contact with the existing provincial journals of co-operation, which will provide authoritative material for treatment of local topics, and it is hoped that the progressive development of the provincial journals—appearing preferably both in English and in the vernacular—will go on *pari passu* with that of the new Review.

The first number contains discussions of problems relating to: 1. agricultural credit; 2. debt conciliation; 3. consolidation of holdings on a co-operative basis; 4. arbitration societies and women's societies, which are being tried out in the Punjab; 5. co-operative education; 6. co-operative marketing. It is intended to take up one or two of these separately in succeeding issues giving more intensive treatment.

The Review is well printed and attractively produced; the editor is a recognised authority on co-operation in India, and there is abundant evidence that the need for a journal of this order has long been felt in India both in official and in non-official co-operative circles. It should in fact become a valuable contribution to the literature of the subject].

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MONTHLY BULLETIN

OF

AGRICULTURAL ECONOMICS AND SOCIOLOGY

STUDIES ON THE INTERNATIONAL MARKET FOR AGRICULTURAL PRODUCTS

II. — Effect of Changes in International Price Levels on the Principal Markets for Eggs in the Shell 1926-1933.

Since international trade in exchange of commodities consists in business transactions, the simplest trading principles must be also applicable to such exchange. The calculable financial profit may be regarded as the simplest principle; this seems in the first place to stimulate supply, but may subsequently have an influence on the extent of the business done. In any case such principles always form the basis for transactions between human beings, and must accordingly be established for exchange of commodities between countries, which for purposes of trading may be considered as merely the group conception of individuals.

In this article it is proposed to consider how far differences and changes in international price levels (alike of importing and of exporting countries), expressed in gold or Swiss francs, have affected imports on markets, that is to say, exports of the supplying countries, with special reference to the world market for eggs in shell in the years 1926 to 1933.

Apart from the presence of a certain margin or difference in price levels international trading is inconceivable. This margin represents, considered from the standpoint of the exporter, the highest limit of attainable gross profit, which must however cover all trading, transport and tariff costs and charges. Considered from the standpoint of the importer a wide margin makes it possible to buy relatively cheaply and to sell at corresponding rates. Within this margin lies the actual price on the basis of which the business is successfully done.

Tariffs are, generally speaking, considered to be an important inhibiting factor in international trade in commodities. If, however, the tariff rates are compared with this price margin, it will be seen that, in respect of eggs, tariff rates, even the autonomous, represent small values only in comparison with the extent of the price margin. Such a comparison is attempted below and shows that, taking the average of the six markets indicated for eggs in shell, the price margin in 1931 amounted to 4.19 gold francs per 100 eggs, while, on the other hand, the average autonomous tariff rates amounted to 0.95 gold francs only per 100, *i. e.*, about one fourth of the price margin, and the conventional tariff rates to only 0.50 gold francs per 100, *i. e.*, about one eighth of the price margin.

Countries	Autonomous tariff rates (mid-February 1931)	Conventional tariff rates (yearly average 1931)	Price margin (yearly average 1931)
<i>gold francs per 100 eggs</i>			
Germany.	2.31	0.38	2.37
Great Britain	free	free	4.75
France.	0.31	0.31	3.63
Switzerland.	0.94	0.94	8.59
Czechoslovakia.	0.61	0.38	3.32
Spain.	0.59	—	2.48
Arithmetic mean.	0.95	0.50	4.19

Unfortunately it is not possible to give a comparison extending over all the years here under review of the tariff rates and the price margins since the statistical bases are not forthcoming. For the purposes of this article it appears to be sufficient to present this situation, as it occurred in 1931, a year, that is, in which there was an extensive application of protective tariffs.

In spite of the tariffs, the rates of which have been shown to be of small importance as compared with the price margin, the international trade in eggs in the shell was conducted on purely economic lines until the protective tariff was replaced by the quotas and clearing system, which in origin and motive force is undoubtedly to a great extent conditioned by the limitations of the international course of payments, and is accordingly to be considered as an emergency measure. This emergency measure however counteracts the levelling tendency of the international trade which whether conducted freely or hampered by tariffs is none the less directed by economic considerations only; a fact which can be illustrated from the examples given here for world trade in eggs in the shell.

As regards the construction of the price margin there still remains something to be said. As basis for the ascertainment of this margin the home market quotations of the different countries were taken, not the so-called export prices, since it was important for our purpose to represent the actual international price level and its changes, so far as the unfortunately much restricted material admitted, and to compare these changes with the fluctuations of the import and export volumes of eggs in the shell.

The export prices officially noted in the different countries for eggs in the shell could not be used, because they included the most varying supplementary charges. For example in the Netherlands these prices included a certain sum, which the Government adds to the price, in order to give the producers a compensation for the rise in the prices of feed grain owing to the Governmental measures, apart from which the egg producers could not carry on on account of the special national price conditions. The method we have adopted of using the national price quotations will be found adequate for the elucidation of the questions here raised.

Certain limits are set to the consideration of the questions proposed by the quota and clearing system, which substitutes for the multilateral international trade the bilateral type, thereby excluding competition and the leveling effect of the former position of the international price level. By this means the purchasing country is necessarily forced, as the condition of consignment of its own goods, chiefly finished manufactures, to purchase from a country commodities, in this case eggs in the shell, at a price which may be far above that of supplies of similar quality from other lands.

In Table I the average gold franc values appear of the markets in respect of which sufficient data exist, the markets included being Germany, Great Britain, Switzerland, France, Spain and Czechoslovakia. The prices are distributed according to supply and demand, and there are also shown the differences between the supply and demand prices of the markets indicated.

In the first place attention is drawn to the average result of the whole table in column I, which represents the arithmetic mean of all the items. The supply on these markets in 1926 is seen to be at 14.26 gold francs per 100 eggs, and it is of interest to note that the culminating years of the last conjuncture period could have no influence on the average gold franc value of the supply. In 1927 the value was 0.30 gold francs higher than in 1926, but fell in 1928, rising in 1929 but not so as to attain the level of 1926. From 1929 it drops sharply and is almost halved by 1933.

TABLE I (I).

(a) *Supply Prices on the Markets
in gold francs per 100 eggs.*

Years	Germany	Great Britain	Switzerland	France	Spain	Czechoslovakia	Arithmetic mean value
	1	2	3	4	5	6	7
1926.	14.31	14.41	13.81	14.29	14.46	—	14.26
1927.	14.11	14.76	14.64	14.50	14.78	—	14.56
1928.	13.39	14.62	13.74	13.34	14.65	10.40	13.36
1929.	13.94	15.30	14.52	13.61	15.44	11.58	14.07
1930.	11.33	12.83	12.04	11.44	12.91	8.62	11.53
1931.	9.31	10.85	10.41	9.68	10.88	6.96	9.68
1932.	7.07	8.60	8.70	7.66	8.93	5.85	7.80
1933.	6.61	8.62	8.72	7.81	7.69	4.98	7.41

(1) Note to Table I: The supply prices on the markets are composed of the separate prices of the following countries:

1. Germany: Belgium, Netherlands, Denmark, Sweden, Poland, Italy.
2. Great Britain: Irish Free State, Belgium, Netherlands, Denmark, Italy, France.
3. Switzerland: France, Italy, Belgium, Netherlands, Poland.
4. France: Belgium, Italy, Netherlands, Poland.
5. Spain: Germany, Belgium, Denmark, France, Netherlands, Italy.
6. Czechoslovakia: Poland.

(b) *Demand Prices on the Markets*
in gold francs per 100 eggs.

Years	Germany 1	Great Britain 2	Switzerland 3	France 4	Spain 5	Czecho- slovakia 6	Arithmetic mean value 7
1926.	16.79	22.05	22.30	12.34	18.04	—	17.36
1927.	15.98	21.00	22.30	10.10	18.15	—	17.78
1928.	15.84	21.21	22.00	15.38	15.99	12.64	16.96
1929.	17.55	23.10	23.00	16.36	15.34	14.14	17.61
1930.	14.45	19.48	20.00	14.44	12.82	11.36	15.09
1931.	11.68	15.60	19.00	13.31	11.41	10.28	13.36
1932.	9.87	11.25	16.00	12.84	—	9.34	12.49
1933.	11.10	10.39	14.00	11.45	—	9.16	11.74

(c) *Price Margins*
(Differences between Supply and Demand Prices on the Markets)
in gold francs per 100 eggs.

Years	Germany 1	Great Britain 2	Switzerland 3	France 4	Spain 5	Czecho- slovakia 6	Averages of price margins 7
1926.	— 2.48	— 7.64	— 8.49	+ 1.95	— 3.58	—	— 3.10
1927.	— 1.87	— 6.24	— 7.66	— 0.60	— 3.37	—	— 3.22
1928.	— 2.45	— 6.59	— 8.26	— 2.04	— 1.34	— 2.24	— 3.60
1929.	— 3.61	— 7.80	— 8.48	— 2.75	— 2.43	— 2.56	— 3.54
1930.	— 3.12	— 6.65	— 7.96	— 3.00	— 1.94	— 2.74	— 3.56
1931.	— 2.37	— 4.75	— 8.59	— 3.63	— 2.48	— 3.32	— 3.68
1932.	— 2.80	— 3.15	— 7.30	— 5.18	—	— 3.49	— 4.69
1933.	— 4.49	— 1.77	— 5.28	— 3.64	—	— 4.18	— 4.33

(d) *Imports on the Markets of Eggs in Shell*
in thousands of quintals.

Years	Germany 1	Great Britain 2	Switzerland 3	France 4	Spain 5	Czecho- slovakia 6	Total 7
1926.	825	1,108	56	21	64	26	2,100
1927.	861	1,182	58	15	126	26	2,268
1928.	883	1,398	67	33	198	40	2,619
1929.	966	1,321	69	58	123	41	2,578
1930.	868	1,369	71	74	92	51	2,525
1931.	740	1,361	71	185	30	81	2,468
1932.	970	1,001	81	28	41	125	2,246
1933.	597	835	39	20	112	4	1,607

On the other hand a much more constant development is noted in the gold franc values of the demand countries. Here the price per 100 eggs rises from 1926 to 1929, although with fluctuations in the earlier years, then it falls abruptly till 1933, but not losing more than 30 per cent. of its level in 1929.

The differences between the gold franc prices of the supply and demand countries show a corresponding development. Taken as a whole it rises fairly uniformly from 1926 to 1933. In 1926 it amounts to 3.10 gold francs per 100 eggs (demand less supply price), and in 1933 to 4.33 gold francs. This margin increases from 1926 to 1928 from 3.10 to 3.60 gold francs, *i. e.*, about 20 per cent., keeps at about the same level till 1931, rising sharply by 1932 to 4.69 gold francs and again slowly falling by 1933 to 4.33 gold francs.

Turning in Table I to section (d) which shows the imports of the six markets selected out of the countries indicated in the note to Table I, we see that the imports of these countries taken together rise by about 25 per cent. from 1926 to 1928, *viz.* from 2,100,000 to 2,619,000 quintals. Although dropping to 2,468,000 quintals, the total import of the markets maintained approximately this level in 1931. There was a sharp fall from 1931 to 1933, *viz.*, from 2,468,000 in 1931 to 1,607,000 quintals in 1933.

The differences between supply and demand prices, or the price margins, have thus developed as already stated up to 1931 similarly. From 1931 to 1933 a sharp rise took place, to 4.69 in 1932 and to 4.33 gold francs in 1933.

From 1931 to 1933 accordingly the price margins and the imports show directly opposed tendencies. As stated at the beginning of this article, if the simplest trading principles can find expression equally in the quite free economic system as in the tariff restricted, they lose this effect with a clearing system. And this latter system has to be reckoned with increasingly since 1931.

It is Czechoslovakia that provides the most interesting example for the supply destroying effect of the clearing system which has mainly arisen out of the difficulties of the international course of payments. Czechoslovakia imported from 1926 up to and including 1931 eggs in the shell almost exclusively from Poland to the extent of between 90 and 96 per cent. of the total imports. In 1932 and 1933 this main exporter was supplemented by Rumania, Hungary, Bulgaria, Lithuania, Denmark and Yugoslavia. In 1932 Poland still took the lead with 85 per cent. of the egg market of Czechoslovakia, while in 1933 its share was only 5 per cent. At the same time it may be noted that the price margin between Poland and Czechoslovakia increased from 1932 to 1933 from 3.49 to 4.18 gold francs per 100 eggs, while, for example, the price margin of Czechoslovakia in relation to Denmark with a doubled import in 1933 as compared with 1932 increased only from 3.29 to 4.03 gold francs, and thus still remained somewhat more unfavourable than in respect of Poland.

The years from 1932 may thus for our purposes be regarded as abnormal, speaking generally, since under pressure of the various emergency measures the original motive forces of international trade had become ineffective.

In this general survey of the effect of the changes in the international price level on the transactions effected on important sections of the world market for eggs in the shell, the separate occurrences on the individual markets and

in the export countries concerned are shown as average results. The opposing single tendencies have frequently thereby balanced each other, or events of peculiar importance have affected the whole on one side or the other.

The situation for the single markets and the individual exporting countries may now be considered separately, so far as allowed by the available statistical material.

For the *German* market it is possible to submit to a closer examination six countries which export eggs into Germany, *viz.*, Netherlands, Belgium, Denmark, Sweden, Poland and Italy. These six countries cover about 65 per cent. of the demand of the German market in the selected period from 1926 to 1933.

On Table II the following items appear:

2 (a) The prices for 100 eggs, annual average prices for medium quality for the six above mentioned countries and Germany, in gold francs.

2 (b) The difference of the egg prices of the six countries indicated as compared with Germany, in gold francs.

2 (c) The total egg import of Germany from the six countries indicated and the egg import of Germany from each of the countries.

The effects of the changes of the international price level between Germany and the exporting countries in question on the German imports from those countries may now be examined.

In the first place there may be considered the whole situation on the German market for eggs in the shell.

The movement of prices for eggs in Germany (German fresh eggs, 59-62 gr., wholesale) took the following course in gold francs (Table II (a) Col. 1): 1926, 16.79 gold francs, then a decline to 15.84 gold francs by 1928, in 1929 the highest price of the period with 17.55 gold francs for 100 eggs, in 1930 a steeper decline to 14.45 gold francs, further fall of prices to 9.87 gold francs by 1932, and slow rise in 1933 to 11.10 per 100.

On the other hand taking the arithmetic mean of the supply prices of the comparable countries (Table II (a), Col. 8) the development is as follows: 1926 highest price with 14.31 gold francs per 100 eggs, falling to 13.39 gold francs by 1928, in 1929 rise to 13.94 gold francs, then including 1930 a sharp fall to 6.61 in 1933. The market conditions in 1928-29, which caused the prices to rise so high in the demand countries, so that in 1929 the highest price for the period 1926-33 was noted, did not have so marked an effect in the countries of supply, although a fresh rise of the average price level of the supplies was stimulated thereby.

The average price margin between the gold franc prices of the supply and demand has had a corresponding development. It falls from 2.48 gold francs 1926 to 1.87 gold francs 1927, then rises to 3.61 by 1929, falls again to 2.37 by 1931, and again rises to 4.49 gold francs by 1933. (Table II (b) Column 8).

The imports of the German market from the export countries here considered have developed precisely as the price margins, except that the decline of the price margin from 1926 to 1927 had no effect and that the year 1933, as an abnormal year under the influence of the clearing agreement, took a course contrary to the development of the price margin. The imports of the German market

TABLE II.

(a) *Supply and Demand Prices on the German Market
in gold francs per 100 eggs.*

Years	Demand Price in Germany 1	Supply Prices						Arithmetic mean of supply prices 8
		Nether- lands 2	Belgium 3	Denmark 4	Sweden 5	Poland 6	Italy 7	
1926	16.79	13.58	14.52	14.75	13.94	—	14.78	14.31
1927	15.98	13.32	14.33	14.06	13.06	—	15.86	14.11
1928	15.84	12.72	14.28	13.75	13.22	10.40	15.94	13.39
1929	17.55	13.31	15.26	13.89	13.30	11.58	16.28	13.94
1930	14.45	10.65	13.29	11.44	10.78	8.62	13.19	11.33
1931	11.68	9.33	10.62	8.52	8.59	6.96	11.82	9.31
1932	9.87	6.52	8.17	6.05	5.71	5.85	10.11	7.07
1933	11.10	—	7.49	5.13	5.07	4.98	10.96	6.61

(b) *Margins between Supply and Demand Prices.*

Years	Germany 1	Nether- lands 2	Belgium 3	Denmark 4	Sweden 5	Poland 6	Italy 7	Averages of price margins 8
1926	± 0.00	— 3.21	— 2.27	— 2.04	— 2.85	—	— 2.01	— 2.48
1927	± 0.00	— 2.66	— 1.65	— 1.92	— 2.92	—	— 0.12	— 1.87
1928	± 0.00	— 3.12	— 1.56	— 2.09	— 2.62	— 5.44	+ 0.10	— 2.45
1929	± 0.00	— 4.24	— 2.29	— 4.66	— 4.25	— 5.97	— 1.27	— 3.61
1930	± 0.00	— 3.80	— 1.16	— 3.01	— 4.67	— 5.83	— 1.26	— 3.12
1931	± 0.00	— 2.35	— 1.06	— 3.16	— 3.09	— 4.72	+ 0.14	— 2.37
1932	± 0.00	— 3.35	— 1.70	— 3.82	— 4.16	— 4.02	+ 0.24	— 2.80
1933	± 0.00	—	— 3.71	— 6.97	— 6.03	— 6.12	— 0.14	— 4.49

(c) *Imports on the German Market from Supply Countries
in thousands of quintals.*

Years	Total of imports into Germany from 1	Netherlands 2	Belgium 3	Denmark 4	Sweden 5	Poland 6	Italy 7
1926	825	313	44	102	2	233	131
1927	861	387	89	119	4	178	84
1928	883	424	141	131	3	96	88
1929	966	476	193	110	14	99	74
1930	868	473	123	79	16	116	61
1931	740	468	70	88	11	39	64
1932	970	537	163	204	21	24	21
1933	597	337	44	152	20	40	4

from the export countries here considered rose from 825,000 quintals eggs in 1926 to 966,000 in 1929, i. e., by about 17 per cent. while the price margin in the same years rose from 2.48 to 3.61 gold francs, or by some 45 per cent., then similarly to the price margin the imports fell from 966,000 quintals in 1929 to 740,000 by 1931, a fall of about 20 per cent., while the price margin in the same time fell from 3.61 gold francs in 1929 to 2.37 in 1931, thus by about 30 per cent. From 1931 to 1932 the price margin improved from 2.37 to 2.80 gold francs, thus by 18 per cent., to which there corresponds an increase of imports from 740,000 to 970,000 quintals, or a percentage increase of some 30 per cent.

In regard to the comparison made here of the percentage values of the separate movements of the price margins and of the imports, it must be recognised that a fairly far reaching correspondence exists between them. Returning to our introductory consideration by which the simplest general trading principles were recognised to be applicable also for international trade in commodities, it may be said that the extent of the price margin on the German egg market, has a certain influence corresponding fairly closely to the movements of the price margin, on the extent of the business done. This influence continues as long as the international trade in commodities is not regulated by the clearing system or by any other than purely trading principles. For the individual exporting countries and their deliveries on the German market these interactions must now be traced in detail.

In the case of the *Netherlands* the decline of the price margin from 1926 to 1927 does not run parallel to the decline of the exports to Germany; these latter are higher by about 24 per cent. Taking into consideration, however, the whole period from 1926 to 1929, there corresponds to a rise in the price margin from 1926 with 3.21 gold francs to 4.24 gold francs in 1929, or a rise of about 30 per cent., an increase in the egg exports of the Netherlands to Germany from 313,000 quintals in 1926 to 476,000 in 1929, or about 50 per cent. The recurrent decline of the price margin from 4.24 gold francs in 1929 to 2.35 in 1931, or by 45 per cent., has no such marked effect, but merely involves a reduction of the egg imports from 476,000 quintals in 1929 to 468,000 in 1931, a reduction of some 2 per cent. Similarly the rise that set in of the price margin from 2.35 gold fr. in 1931 to 3.35 in 1932, or a 40 per cent. rise, brought with it an increase of 15 per cent. only in the egg exports from the Netherlands to Germany; the rise in volume being from 468,000 quintals in 1931 to 537,000 in 1932. The year 1933 must here be left out of consideration for the reasons already given.

Apart from the movements of the year 1927, it may be established that a rising movement of the margin between the prices of eggs in the Netherlands and those in Germany is followed by increase in exports from the Netherlands into Germany, although expressed as percentages, these tendencies do not appear so much alike as it was found possible to show previously in the examination of the average figures of several exporting countries.

In *Belgium* the price margin remains taken from 1926 to 1929 at almost the same level, and in spite of a sharp rise in egg exports into Germany which in this space of time more than quadrupled. If 1927 is taken as starting point and the development compared up to 1929, the picture become markedly clearer. To a rise in the price margin in these years from 1.65 gold fr. to 2.29, or about 40 per cent., there corresponds an increase in the exports from Belgium to Germany from 89,000 quintals in 1927 to 193,000 in 1929, or about 115 per cent. This is followed for Belgium by a decline in the price margin from 2.29 gold fr. in 1929 to 1.06 in 1931, or a decline of 55 per cent., to which corresponds a decline in the volume of exports to Germany from 193,000 quintals in 1929 to 70,000 in 1931, or by 65 per cent. From 1931 to 1932 there follows a rise in the price margin from 1.06 gold fr. in 1931 to 1.70 in 1932, or by 60 per cent., which is accompanied by an increase in egg exports of Belgium to Germany from 70,000 quintals in 1931 to 163,000 in 1932, that is to say, one of about 130 per cent. The year 1933 is here also left out of consideration.

The development of the egg exports of *Denmark* into Germany is not so fully explicable, as was the case in the Netherlands and Belgium, from the trends of the price margins. None the less the trend from 1929 to 1930 is instructive, when the price margin fell from 4.66 to 3.01 gold francs, or by about 35 per cent., and the volume of exports from 110,000 to 79,000 quintals or by about 30 per cent. This was followed by an increase up to 1932, the price margin rising from 3.01 to 3.82 gold francs in the two years, *i. e.*, by about 25 per cent., while the Danish exports increased from 79,000 to 204,000 quintals *i. e.*, by two and a half times.

For *Sweden* the items are comparable only from 1929, because only from that year has there been any export worth mention from Sweden into Germany. The price margin rose from 4.25 gold francs in 1929 to 4.67 in 1930, or by about 10 per cent., and the Swedish egg export into Germany from 14,000 quintals in 1929 to 16,000 quintals in 1930, or by about 15 per cent. From 1930 to 1931 the price margin again fell from 4.67 to 3.09 gold francs, *i. e.*, by about 35 per cent., and there was a shrinkage of exports into Germany from 16,000 quintals in 1930 to 11,000 in 1931, *i. e.*, by about 30 per cent. From 1931 to 1932 there was again a marked rise in the price margin, *viz.*, from 3.09 to 4.16 gold francs, or about 35 per cent., while the Swedish exports into Germany increased from 11,000 quintals in 1931 to 21,000 in 1932, or by about 90 per cent.

For *Poland*, where the prices are not available for the years 1926 and 1927, a fairly uniform export into Germany may be established for the years 1928, 1929, and 1930, along with a price margin which is almost constant. The price margin figures are: for 1928, 5.44, for 1929, 5.97 and for 1930 5.83 gold francs, while the exports into Germany run as follows: 1928, 96,000 quintals, 1929, 99,000 quintals and 1930, 116,000 quintals. From 1930 to 1931 the price margin falls from 5.83 to 4.72 gold francs, or by 20 per cent., while the Polish egg export into Germany

declined from 116,000 quintals in 1930 to 39,000 in 1931, *i. e.*, by about 65 per cent. A still further reduction in the Polish exports to Germany was the result of the subsequent fall in the price margin, *viz.*, from 4.72 gold francs in 1931 to 4.02 in 1932, or by 15 per cent., the exports declining afresh from 39,000 quintals in 1931 to 24,000 in 1932, or by 40 per cent.

In respect of egg exports from *Italy* into Germany, there is no recognisable parallelism between trends of price margins and of exports. This may be connected with the fact that Italy was in that period both an importing and an exporting country for eggs in the shell. It may however be unconditionally stated that the complete disappearance of the price margin between the Italian and the German egg prices from 1931 onwards and the change to a negative position greatly diminished the egg export from Italy to Germany in 1932 and in 1933 almost completely extinguished it.

Summarising it may be said with reference to the influence which the price margin on the German market exercises on the imports into Germany from the principal countries of supply, that, taken as a whole, price margins and imports to a striking degree run parallel, and that on a review of the separate countries similar trends may be established in a large number of cases, while some cases stand outside the investigation.

Egg prices in *Great Britain* weakened somewhat from 1926 to 1927, *viz.*, from 22.05 gold francs the 100 eggs (British eggs, home price level) to 21.00 gold francs, subsequently rising from 21.21 gold francs in 1928 to 23.10 in 1929, and falling sharply till in 1933 the price of 10.39 gold francs was reached, or 45 per cent. of the 1929 price.

The export prices, taking the average of the countries: Irish Free State, Belgium, Netherlands, Denmark, Italy and France, have shown the following course: 1926, 14.41 gold francs for 100 eggs, 1929 15.30, thus a rise, followed however by a marked decline till in 1933 the price stood at 8.62 gold francs, or about 55 per cent. of the 1929 position. The export prices have thus proved more stable than the prices in the importing countries. This fact finds clear expression in the course of the price margin especially for the years from 1931. Up to and including 1930 the price margin is maintained at a certain height, varying between 6.24 gold francs in 1927 and 7.80, in 1929. From 1931 it underwent very marked reduction, to 4.75 gold francs in 1932 and finally to 1.77 gold francs in 1933.

The reaction of this movement of the price margin on the egg market of Great Britain also set in thus with the year 1931, while for the years up to 1930 no recognisable connections can be noted in respect of the trend as a whole. Thus from 1930 to 1931 the price margin fell from 6.65 gold francs to 4.75, or by 30 per cent., while the exports of the countries here reviewed hardly decline by as much as 1 per cent. On the other hand, from 1931 to 1932 the price margin diminishes from 4.75 gold francs to 2.65 or by 45 per cent., and the exports of the six exporting countries into Great Britain fall from 1,362,000 quintals to 1,001,000, or by 27 per cent. The further decline of the price margin

TABLE III.

(a) *Supply and Demand Prices on the British Market
in gold francs per 100 eggs.*

Years	Demand Price in Great Britain 1	Supply Prices						Arithmetic mean of supply price 8
		Irish Free State 2	Belgium 3	Nether- lands 4	Denmark 5	Italy 6	France 7	
1926	22.05	16.48	14.52	13.58	14.75	14.78	12.34	14.41
1927	21.00	15.75	14.33	13.32	14.06	15.86	15.10	14.76
1928	21.21	15.65	14.28	12.72	13.75	15.94	15.38	14.62
1929	23.10	16.70	15.26	13.31	13.89	16.28	16.36	15.30
1930	19.48	13.96	13.29	10.65	11.44	13.19	14.44	12.83
1931	15.60	11.50	10.62	9.33	8.52	11.82	13.31	10.85
1932	11.25	7.88	8.17	6.52	6.05	10.11	12.84	8.60
1933	10.39	—	7.49	—	5.13	10.96	11.45	8.62

(b) *Margins between Supply and Demand Prices.*

Years	Great Britain 1	Irish Free State 2	Belgium 3	Nether- lands 4	Denmark 5	Italy 6	France 7	Averages of the price margins 8
1926	± 0.00	— 5.57	— 7.53	— 8.47	— 7.30	— 7.27	— 9.71	— 7.64
1927	± 0.00	— 5.25	— 7.67	— 7.68	— 6.94	— 5.14	— 5.90	— 6.24
1928	± 0.00	— 5.56	— 6.93	— 8.49	— 7.46	— 5.27	— 5.83	— 6.59
1929	± 0.00	— 6.40	— 7.84	— 9.79	— 9.21	— 6.82	— 6.74	— 7.80
1930	± 0.00	— 5.52	— 6.19	— 8.83	— 8.04	— 6.29	— 5.04	— 6.65
1931	± 0.00	— 4.10	— 4.98	— 6.27	— 7.18	— 3.58	— 2.29	— 4.75
1932	± 0.00	— 3.37	— 3.18	— 4.73	— 5.20	— 1.14	+ 1.59	— 2.65
1933	± 0.00	—	— 2.90	—	— 5.26	+ 0.57	+ 1.06	— 1.77

(c) *Imports on the British Market from the Supply Countries
in thousands of quintals.*

Years	Total of imports into Great Britain from 1	Irish Free State 2	Belgium 3	Netherlands 4	Denmark 5	Italy 6	France 7
1926	1,108	332	146	149	422	15	44
1927	1,182	379	161	177	426	7	32
1928	1,338	388	218	204	400	4	124
1929	1,321	376	222	238	418	2	65
1930	1,369	359	175	276	505	5	49
1931	1,361	343	155	288	566	2	7
1932	1,001	296	119	105	479	—	1
1933	835	258	34	75	468	—	—

** Ec. 4 Incl.

from 2.65 gold francs in 1932 to 1.77 in 1933, or by about 30 per cent., is accompanied by a decline of these exports to Great Britain of 1,001,000 quintals to 835,000, thus by about 17 per cent. In the case of Great Britain the year 1933 may be included here, since the British market in 1933 was still a tariff limited market only in the sense of our introductory observations.

As regards the countries exporting eggs into Great Britain the following are the data:

For the *Irish Free State* the price margin rises from 5.57 gold franc in 1926 to 6.40 in 1929, *i.e.*, by about 15 per cent., while the Irish exports into Great Britain increase from 332,000 quintals to 376,000, thus by about 15 per cent. From 1929 to 1930 the price margin falls from 6.40 gold francs to 5.52, or by about 15 per cent., and the exports of the Irish Free State of eggs in the shell to Great Britain fall from 376,000 quintals to 359,000, thus by about 5 per cent. Then the price margin from 1930 to 1931 declines further from 5.52 gold francs to 4.10 gold francs, that is by about 25 per cent., and the exports from 359,000 quintals to 343,000, thus by some 5 per cent. From 1931 to 1932 the price margin fell further from 4.10 to 3.37 gold francs., *i.e.*, by about 20 per cent., an event accompanied by a diminution of exports into Great Britain from 343,000 quintals in 1931 to 296,000 in 1932, or by about 15 per cent. Unfortunately the corresponding data for 1933 are not yet available, so that this year must remain out of consideration.

In *Belgium* along with a slight rise in the price margin from 7.53 gold francs in 1926 to 7.84 gold francs in 1929 there is a fairly considerable increase of egg exports to Great Britain, *viz.*, from 146,000 quintals in 1926 to 222,000 in 1929, thus by about 50 per cent. This was followed from 1929 to 1930 by a decline in the price margin from 7.84 gold francs to 6.19, *i.e.*, by about 20 per cent., to which there corresponds a decline in exports from 222,000 quintals in 1929 to 175,000 in 1930, also equivalent to about 20 per cent. From 1930 to 1931 the price margin falls further from 6.19 gold francs to 4.98, or again by 20 per cent., while the exports of Belgium to Great Britain decline from 175,000 quintals in 1930 to 155,000 in 1931, thus by about 12 per cent. Also from 1931 to 1932 the price margin falls from 4.98 gold francs to 3.18, *i.e.*, by 35 per cent., while the Belgian exports to Great Britain diminish from 155,000 quintals in 1931 to 119,000 in 1932, *i.e.*, by about 25 per cent. From 1932 to 1933 the price margin shrinks for Belgium from 3.18 gold francs to 2.90, thus by about 10 per cent., while on the other hand the Belgian exports to Great Britain decline from 119,000 quintals in 1932 to 34,000 in 1933, or by about 70 per cent. This sharp decline in the Belgian egg export from 1932 to 1933 is due also to other reasons than that of the difference in level between the Belgian and the British prices for eggs in the shell, and may be due in the main to the "currency competition" of Denmark, which is to be investigated later in connection with the discussion of the Danish egg exports to Great Britain.

Up to the years 1931 to 1933 very detailed correspondences may be noted in the trends of the price margin and the exports from Belgium into Great Britain.

The *Netherlands* show from 1926 to 1931 a steadily rising egg export into Great Britain, increasing in these years from 149,000 quintals in 1926 to 288,000 in 1931. The price margin for the Netherlands stood in the years 1926 to 1930 at a very high level, between 7.68 gold francs in 1927 and 9.79 in 1930, and falls then, on the further increase in the exports into Great Britain, till in 1931 it stood at 6.27 gold francs. From 1931 to 1932 the price margin diminished further from 6.27 gold francs in 4.73, thus by about 25 per cent., while the exports to Great Britain declined from about 288,000 quintals in 1931 to 105,000 in 1932, thus by about 65 per cent. The egg exports of the Netherlands to Great Britain fall still further till in 1933 they reach 75,000 quintals. It is unfortunate that for 1933 no Netherlands internal price quotations were yet available. For the Netherlands the officially quoted price for "export eggs" cannot here be applied, because it includes a kind of export premium and so is not the price with which the Netherlands actually comes into competition with the other countries. Taking as a basis the Netherlands export prices for eggs, the prices for Netherlands eggs, apart from duty, are somewhat higher than for example the prices in Germany, and also those in Great Britain in most years.

In the case of *Denmark* the development of the price margin and the exports to Great Britain is of interest, and also the relation of the price margin for Denmark to those of its keenest competitors on the British market, namely to the price margins of Belgium and the Netherlands. In spite of wide fluctuations in its own price margin, which rose from 7.30 gold francs in 1926 to 9.21 gold francs in 1929, and then again fell to 5.26 gold francs in 1933, Denmark was in a position to increase its egg exports to Great Britain from 1926 to 1931 almost uninterruptedly—there being on 1928 only a slight decline—the figures being 422,000 quintals in 1926 and 566,000 in 1931. From 1931 to 1932 the price margin for Denmark fell from 7.18 gold francs to 5.20 gold francs, thus by about 30 per cent., and the exports to Great Britain diminished from 566,000 quintals in 1931 to 479,000 in 1932, thus by about 15 per cent. From 1932 to 1933 the price margin rose slightly from 5.20 to 5.26 gold francs, while the exports from Denmark to Great Britain weakened somewhat from 479,000 quintals in 1932 to 468,000 in 1933.

An instructive comparison may be made of the reaction of the Danish price situation for eggs on the two competing countries, Belgium and the Netherlands. This is most clearly recognised from the course of the index numbers for the price margins on the one hand, and the exports of these countries into Great Britain on the other, stated on page 146 with 1926 = 100.

While the price margin for Denmark declined by 29 per cent. from 1926 to 1932 the percentage of diminution for Belgium was 58 and that for the Netherlands 44. In consequence Denmark was able to increase egg exports into Great Britain by 14 per cent. while from 1926 to 1932 the egg export from Belgium was reduced by 18 per cent., and that from the Netherlands by 29 per cent. In 1933 the position of Belgium is still worse, the egg exports to Great Britain have fallen away to 23 per cent. of the 1926 position, and in the same way the egg exports of the Netherlands have dropped to 51 per cent. of the 1926

position. Denmark has thereby been enabled to secure a considerable start of Belgium and the Netherlands, an advantage probably mainly due to the fact that the Danish crown has followed the English pound, and that thereby Denmark could maintain a more favourable position in respect to Great Britain than was possible for the gold standard countries of Belgium and the Netherlands.

Index Numbers of the Price Margins (1926 = 100).

Years	Denmark	Belgium	Netherlands
1926	100	100	100
1927	95	102	91
1928	102	92	100
1929	126	104	116
1930	110	82	104
1931	98	66	74
1932	71	42	56
1933	72	39	—

Index Numbers of the Egg Exports to Great Britain (1926 = 100).

Years	Denmark	Belgium	Netherlands
1926	100	100	100
1927	101	110	119
1928	95	150	137
1929	99	153	160
1930	120	120	185
1931	134	107	193
1932	114	82	71
1933	111	23	51

For *Italy* the position may be stated as follows. The price margin was at its highest in 1926 with 7.27 gold francs, and this was also the year in which Italian exports of eggs to Great Britain over the period 1926 to 1933 stood highest, 15,000 quintals. From 1926 to 1927 the price margin fell to 5.15 gold francs, *i. e.*, by 30 per cent., while the Italian egg exports to Great Britain declined from 15,000 quintals in 1926 to 7,000 in 1927, a decline of 55 per cent. From 1927 to 1929 the price margin rose somewhat, from 5.14 to 6.82 gold francs, while the exports diminished fairly considerably. As regards the course of Italian egg exports into Great Britain, it may be noted generally that in the first place the development was never so marked as in other countries, and that in the second place the complete disappearance of a price margin by 1933, or the change into a negative price margin, brought the Italian export trade in eggs with Great Britain virtually to an end even as early as 1932.

A similar picture is presented by the egg export from *France* into Great Britain. So long as the price margin for France could be maintained at a certain height, which was the case from 1926 to 1930 inclusive, the egg exports of France to Great

Britain were still extensive. From 1930 to 1931 however the price margin fell from 5.04 to 2.29 gold francs, thus by about 55 per cent., and the exports into Great Britain declined from 49,000 quintals in 1930 to 7,000 in 1931, thus by more than 85 per cent. In 1933 with a negative price margin of 1.06 gold francs per 100 eggs, there was no longer an egg export from France into Great Britain.

Summarising it may be said of the British market that also on this market it is possible to recognise the influencing of the imports, both as a whole and in respect of the separate countries of supply, by the extent and the development of the price margin, or by the changes in the international price level. Moreover certain competition trends on the British market, as could be shown for Denmark, Belgium and the Netherlands, may be explained by an enquiry on the basis as adopted here.

For *Switzerland* the Swiss egg market (Table IV) the prices from 1926 to 1929 slowly rose from 22.30 to 23.00 gold francs per 100 (fresh country eggs in towns and foreign places). From 1929 to 1933 however prices fell considerably and in 1933 reached 14 gold francs per 100 at a position which was some 40 per cent. lower than that of 1926. The prices of the supply which it is here possible to investigate, that is to say the countries of France, Italy, Belgium, Netherlands and Poland, went slowly up from 13.81 gold francs in 1926 to 14.52, and then fell until 1933 to 8.72, or compared with 1926 a percentage rise of about 35 per cent. The price development of the price margin has been in correspondence. From 1926 to 1929 it remained at nearly the same level although with fluctuations (8.49 gold francs in 1926, 8.48 in 1929), and till 1933 fell to 5.28 gold francs, *i. e.*, about 40 per cent. Swiss imports of eggs in the shell to the countries here reviewed rose from 56,000 quintals in 1926 to 69,000 in 1929, *i. e.*, by about 20 per cent., and then sank till in 1933 they were 39,000 quintals, or as compared with 1929 a decline of some 45 per cent. A very similar movement of the development of the price margin occurred from 1929 to 1933.

TABLE IV.

(a) *Supply and Demand Prices on the Swiss Market*
in gold francs per 100 eggs.

Years	Demand Price in Switzerland	Supply Prices					Arithmetic mean of supply prices
		France	Italy	Belgium	Netherlands	Poland	
	1	2	3	4	5	6	7
1926.	22.30	12.34	14.78	14.52	13.58	—	13.81
1927.	22.30	15.10	15.86	14.33	13.32	—	14.64
1928.	22.00	15.38	15.94	14.28	12.72	10.40	13.74
1929.	23.00	16.36	16.28	15.26	13.31	11.58	14.52
1930.	20.00	14.44	13.19	13.29	10.65	8.62	12.04
1931.	19.00	13.31	11.82	10.62	9.33	6.96	10.41
1932.	16.00	12.84	10.11	8.17	6.52	5.85	8.70
1933.	14.00	11.45	10.96	7.49	—	4.98	8.72

(b) *Margins between Supply and Demand Prices.*

Years	Switzerland	France	Italy	Belgium	Netherlands	Poland	Averages of the price margins
	1	2	3	4	5	6	7
1926.	± 0.00	— 9.96	— 7.52	— 7.78	— 8.72	—	— 8.49
1927.	± 0.00	— 7.20	— 6.44	— 7.97	— 8.98	—	— 7.66
1928.	± 0.00	— 6.62	— 6.06	— 7.72	— 9.28	— 11.60	— 8.26
1929.	± 0.00	— 7.64	— 7.72	— 7.74	— 9.69	— 11.42	— 8.48
1930.	± 0.00	— 5.56	— 6.81	— 6.71	— 9.35	— 11.38	— 7.96
1931.	± 0.00	— 5.69	— 7.18	— 8.38	— 8.67	— 12.04	— 8.59
1932.	± 0.00	— 3.16	— 6.89	— 7.83	— 9.48	— 10.15	— 7.30
1933.	± 0.00	— 2.55	— 3.04	— 6.51	—	— 9.02	— 5.28

(c) *Imports on the Swiss Market
from the Supply Countries in thousands of quintals.*

Years	Total imports into Switzerland from:	France	Italy	Belgium	Netherlands	Poland
	1	2	3	4	5	6
1926.	56	10	40	—	—	6
1927.	58	10	23	5	2	18
1928.	67	20	22	6	1	15
1929.	69	19	21	14	1	14
1930.	71	20	23	14	1	13
1931.	71	14	27	16	4	10
1932.	81	7	23	33	6	12
1933.	39	4	7	17	4	7

In respect of egg exports from *France* to Switzerland no correspondence can be traced for the years 1926 to 1931 of the trend of the price margin and of the volume of exports. None the less the decline in the price margin from 5.69 gold francs in 1931 to 3.16 in 1932, or approximately a 45 per cent. decline, was accompanied by a drop in the French egg exports into Switzerland from 14,000 quintals to 7,000, or by 50 per cent. Similarly to a further decline in the price margin from 3.16 gold francs in 1932 to 2.55 in 1933, or a decline of 20 per cent., there corresponds a decline in exports from 7,000 quintals to 4,000, or by about 45 per cent.

For *Italy* the price margin remained from 1926 to 1932 at much the same height, between 6.44 gold francs in 1927 and 7.72 in 1929, and the Italian exports vary, leaving out of count a relatively large volume in 1926 (40,000 quintals), between 21,000 quintals in 1929 and 27,000 quintals in 1931. From 1932 to 1933 the price margin falls very abruptly, from 6.89 gold francs in 1932 to 3.04

in 1933, a fall of about 60 per cent. This was accompanied by a decline in Italian egg exports into Switzerland from 23,000 quintals in 1932 to 7,000 in 1933, or a decline of nearly 70 per cent.

For *Belgium* the price margin was on the whole maintained from 1926 to 1932, with fluctuations between 6.71 gold francs in 1930 and 8.38 in 1931. No linkage of the trend of the price margin and of the exports into Switzerland is recognisable, as the exports steadily increased from 5,000 quintals in 1927 to 33,000 in 1932. From 1932 to 1933 the price margin fell from 7.83 to 6.51 gold francs, or by 17 per cent, while the Belgian exports into Switzerland declined from 33,000 quintals in 1932 to 17,000 in 1933, a decline of nearly 50 per cent.

In the case of the *Netherlands*, no correspondences can be established owing to the very small volume of exports into Switzerland, and the same is true of *Poland*.

In general it may be said in regard to the influence of the price margin on the imports on the Swiss market, that the process cannot be so clearly recognised as on other markets, but that here also some few typical parallel trends may be distinguished.

The process on the French market can here be only treated in general lines, because in the first place the separate exporting countries under review have entered the market with very small quantities only and because in the second place France was during the period partly an egg exporting and partly an egg importing country, and thus influences are at work which stand outside our enquiry. The price margin is negative in 1926, *i. e.*, the average prices of the supply countries are higher than the French quotation for eggs. From 1927 however the price margin has been positive; it amounted in 1927 to 0.60 gold francs for 100 eggs and by 1932 had reached 5.18 gold francs. The total exports from the exporting countries reviewed here: Belgium, Italy, Netherlands and Poland, are however very uneven. The position of the French egg market tends to appear far from clear from the fact that France imports in increasing proportion eggs in shell from Algiers and Morocco, and also from Turkey, countries which owing to absence of corresponding price statistics do not fall within the range of this enquiry.

Nearly the same may be said of the Spanish as of the French market. Here also considerable influence is exercised by countries from which no corresponding price statistics are available. Among these are prominent Turkey, Egypt and Morocco, including both the French and the Spanish zones, as also the international zone of Morocco.

The *Czechoslovakian* market up to 1931 was governed, as already stated by Polish imports. From 1928 to 1932 the price margin for Poland on the Czech market rose together with the exports from Poland. In spite of this

parallel rising tendency great differences appear in the effect of the changes in the price margin on Polish imports into Czechoslovakia. There is a correspondence between the rise in the price margin from 1928 to 1932 from 2.24 to 3.49 gold francs, or a rise of 55 per cent, and an increase in the Polish exports in those years from 40,000 to 125,000 quintals, or an increase of more than 300 per cent.

Summarising it may be said in regard to the influence of the changes in international price level, that is, in the price margin, on the imports into the principal markets for eggs in the shell, that an indisputable dependence of imports of the markets, alike taken altogether and also in relation to the separate exporting countries of supply, results from the changes in international price level, that it is not however practicable in the first place to express this influence in terms of fixed relations, secondly it varies with the countries and thirdly through the prevalence of the clearing system of trade in the last few years this influence has markedly lost its significance, although the fundamental existence is in no way questioned.

CURT KAPPSTEIN.

AGRICULTURAL POLICY AND THE CRISIS IN POLAND

§ I. — INTRODUCTION

Although the world agricultural crisis is everywhere due to the same general causes, it has given rise to a variety of problems in the separate countries. The agricultural crisis in the different parts of the world thus presents a merely superficial appearance of uniformity and resemblance. It is true that there is everywhere to be noted a decline in the prices of agricultural products as compared with the years preceding the present crisis. It is also true that everywhere the conditions of the world agricultural market are seen to be reacting upon the situation of the market of a particular country. Almost everywhere the same financial problems will be noted, the same difference between the very rapid fall of the prices of agricultural products and the much slower fall of the price levels of industrial products. But within the limits of these general resemblances a surprising variety of local problems is noticeable together with a still wider variation in the methods adopted for their solution.

In devoting these few pages to the agricultural policy of Poland as directed on the problems raised in that country by the world crisis, the writer has done so not merely with the object of detailing the methods that have been followed in Poland, but also because monographs of this kind may—with all proper reserves—supply conclusions that can be applied over a larger sphere than the territory of a single country. In effect, if the aspect of the agricultural crisis in a given country differs in a certain measure from that of all the other countries, there are none the less some problems calling for general solution, which if not identical are at least alike. It can only be a gain to become

acquainted more fully with the results obtained by such and such a measure in agricultural policy, adopted in one or other country.

These few preliminary remarks are necessary as justification of the writer for devoting nearly half this article to the examination of the conditions of agricultural production in Poland before proceeding to the subject he has set himself. However—and this in our opinion is quite clear after the reserves that have been made—it is impossible to speak of a policy of combatting the crisis, if the local conditions in which this policy is being pursued are not thoroughly understood; no image can be formed of the aim pursued by this policy if the problems that arise and the difficulties that make their appearance are not fully explored. To conclude, one more reserve. It is not proposed in this article to treat of the question of Polish agricultural policy except under its internal aspects. Subjects such as the Polish attempts to find international methods of combatting the agricultural crisis, an attempt which has however yielded very admirable results, will not be handled in the course of this article. This question, great as may be its interest, does not appear to fall within the limits of the subject here selected. While recognising its existence, it may be left deliberately out of consideration.

§ 2. — THE AGRICULTURAL CRISIS IN POLAND.

A. *Economic Structure of the Country.* *Place of Agricultural Production.*

The importance of agricultural production for the economic life of Poland inheres in the simple fact that according to the last census the population directly engaged in agricultural production formed 72.3 per cent. of the vocationally active population of the country. To this percentage there should be added the number of persons engaged indirectly in agricultural production, in the first place in the subsidiary agricultural industries and in the organisation of the distribution of agricultural products. Such a correction of the percentage would result in a still higher ratio of the agricultural to the total population, *viz.*, about 76 to 78 per cent. This calculation might lead to the conclusion that Poland is a country with a purely agricultural structure, were it not for the fact that the value of the agricultural production is not more than about 45 per cent. of the value of its total production and that the exports of agricultural products amount only to 15 per cent. of the value of the total Polish exports. It is true that these figures have been calculated for the year 1933, *i. e.*, for a year when, in comparison with the years 1927-29, the fall of agricultural prices was much greater than that of the prices of industrial products, but on the other hand the level of agricultural prices was in 1927-29 about 15 per cent. higher—in relation to those of industrial products—than if a longer period, *e. g.*, 1923-33, had been taken as basis.

Thus, if on an occupational basis Poland may be said to have a distinctly agricultural character, on the basis of the value of its production this character is seen rather to be that of a country in a stage of transition. None the less it is the great mass of the agricultural population which actually represents the basis

of consumption of the products of industry in Poland, and the well-being of this mass determines in a very great measure the industrial activity of the country as well as the economic situation of the towns.

It may further be noted that there is a wide difference between the standard of living of the agricultural population and that of the urban dwellers, and that moreover the difference is equally marked between the standard of living of the agricultural population in the Western and Eastern parts of Poland respectively. Thus, while even a serious deterioration of economic conditions only slightly affects the consumption of certain commodities in the towns—since it is there that such commodities constitute prime necessities—the demand in the villages is much more elastic, and the variations in consumption by the rural population resulting from even superficial changes in the economic situation are disproportionately great. This is true in the first place of commodities such as clothing, coal, chemical fertilisers, and also of those for which there is a relatively fixed demand in the towns, such as sugar, tea, tobacco, salt. Any deterioration of economic conditions of agriculture in Poland is quickly accompanied by regression of the standards of living of the rural population towards the more primitive forms of natural economy.

This phenomenon is closely connected with the agrarian structure, especially with the preponderance of the medium-sized farm holding. In fact out of 3,262,000 rural holdings 3,056,000 were under 20 ha. in area while only 19,000 exceeded 100 ha. This problem is of special importance in regard to the consumption of commodities entering into the costs of agricultural production, such as farm machines, coal, fertilisers, bricks. While according to special monographic studies the consumption of these commodities has diminished on holdings exceeding 100 ha. by about 40 per cent. in the period 1929-32, the ratio is from 75 to 80 per cent on the holdings of less than 100 ha. in the same period.

These facts are here emphasised in order to bring out the importance of the economic conditions of the agricultural population for the situation of the whole country. This fact is of great importance for the policy of combatting the agricultural crisis, since it makes it possible to estimate the magnitude of the sacrifices which must be made in order to improve the position of agriculture and to establish an economic equilibrium in industry and in the other spheres of the economic activity of the country.

It seems opportune here to examine the structure of the production and of the trade in agricultural products as compared with that of industry. Now, in Poland there is found a great variety of forms alike of farm holdings and also in the organisations for distribution of agricultural products. Some statistical illustration has already been given of the structure of farm holdings and it is only necessary to add that the areas sown in the farms exceeding 50 hectares approach 2,913,000 ha., while the sown area on farms of under 50 hectares is 13,640,000 ha.. The agrarian structure of Poland is evidently thus not greatly concentrated. The same cannot be said, with few exceptions to be mentioned below, of the organisation of the distribution of agricultural products. In fact in the western districts of Poland the distribution of more than 60 per cent. of the wheat and of other crop products of a marketable nature is effected by means

of organised agricultural co-operative societies. In the centre of the country this percentage is about 30 per cent. less, and it falls to a very small ratio in the eastern districts. In these latter districts of Poland, which account for less than 40 per cent. of the production of the whole country, there is in fact no organisation of distribution, which is thus almost entirely in the hands of individual dealers. This fact is noted as constituting a factor of great importance for any policy of raising internal prices. The situation becomes even clearer in relation to the marketing of live stock products. Actually apart from the sale of pigs for bacon production and the sale of eggs, which are centralised, the former by the bacon producers and the latter by means of co-operative societies, live stock products are distributed by means of quite individual dealers, more particularly by the intermediary of a series of local and wholesale dealers. On the other hand the organisation of marketing of sugar beet is carried out by the refineries which are for the most part share companies the shares in which are held by the sugar beet growers themselves, and the refining companies fix the purchase prices in advance for a whole production season.

The distribution of agricultural products in Poland thus does not present any distinct general character. Almost every possible form of organisation is found, from a free market form up to a co-operative organisation, and even, in the case of sugar beet, an organisation resembling that of a cartel. In any case it may be remarked that in the conditions described, there exists no means of guiding price movements in any desired direction by the organisation of distribution of agricultural products, since an influence exercised by the existing organisations may always be counterbalanced by the volume of products reaching the market through the intermediary of individual dealers.

On the other hand, and this is a factor which has had an important influence on the programme of Polish agricultural policy in the course of recent years, the majority of the basic manufacturing industries are organised in the form of cartels. The most important of these for agriculture may be noted here: that of coal, of cement, petrol oils, and those of the metallurgical industries, including iron, tin, zinc. Production of chemical fertilisers is centralised to the extent of 90 per cent. in the State factories. Thus, as will appear later, the price movement of the cartelised goods has been a factor of the first importance in the economic equilibrium between the purchasing power of the Polish village and industrial production, and the Polish policy has been especially concerned with this problem.

In concluding this account of the economic structure of Poland, or rather the very general description attempted here, some consideration should be given to the financial structure of the country. The most important features in this structure are shown in the following table:

The financial problem of Poland cannot be fully grasped apart from an understanding on the one hand of the effects of the war in arresting the process of internal capitalisation and on the other of the result of the inflation and devaluation of 1920-24, by which the country was deprived of floating capital. In fact want of floating capital resources is a very characteristic feature of the financial structure of Poland, and the effects of this want are clearly very serious in a time of crisis. Reconstruction of a wide financial basis, especially

by means of internal capitalisation, imposes extreme care in the sphere of the policy of short term credit. On the other hand, since there is little free capital on the market, it is impossible for the country to develop more fully the operations of long term credit.

TABLE I. — *Financial Structure of Poland.*

	1929	1930	1931	1932	1933
	(millions of zloty on 31 December)				
Deposits in share banks and in savings banks	2,694	3,039	2,686	2,723	2,743
Short term banking credits	2,691	2,787	2,209	1,888	1,857
Long term mortgage credits	1,292	1,490	1,681	1,729	1,540
Issues of mortgage credits in course of the year	241	253	189	76	2
	Annual averages				
Discount rate at share banks	12.2%	11.5%	10.9%	10.7%	9.4%
Discount rates at Bank of Poland	8.6%	7.2%	7.5%	7.2%	5.8%

Only the most characteristic features in the economic structure of Poland have been noted here and we have confined ourselves to emphasising only what is essential to the understanding of the important problems which are the result of the crisis in this country. It will now be possible to pass on to the questions more directly connected with the subject of this article.

B. Agricultural Production and Internal Consumption of Farm Products.

The problem of the relation between agricultural production and internal consumption is a factor of the first importance in regard to the methods which may be adopted for combatting the agricultural crisis in a single country. It in this factor which decides whether the establishment of a customs barrier is an adequate means of controlling price levels on the national market, or whether a deflation process is essential, which will allow costs of agricultural production to fall to the level of internal prices, influenced as these are by the level of world prices. This latter case is that of the exporting countries.

Before it is possible to review the methods of the Polish policy for meeting the agricultural crisis, a study has to be undertaken of the relations between Polish internal consumption and agricultural production.

The production of the main crop products in Poland is illustrated by Table II (page 155).

As appears clearly from Table II, there had been a very rapid increase in the period 1927-29 in Polish agricultural production, with the single exception of sugar beet, the production of which was regulated by the refineries, and in 1933 the level of production was much higher than in 1927. This fact is due on the one hand to the disappearance of the results of the military opera-

tions, and on the other hand to the very high level reached by prices of farm products in the three years before the crisis, a level which had made possible the intensification of Polish agricultural production.

TABLE II. — *Production of the Principal Crop Products in Poland*
(million of quintals)

Products	1927	1928	1929	1930	1931	1932	1933
Wheat	16.6	16.1	17.9	22.4	22.4	13.5	21.7
Rye	58.9	61.1	70.1	69.6	57.0	61.1	70.7
Barley	12.8	15.3	16.6	14.6	14.8	14.0	14.4
Oats	21.4	25.0	29.5	23.5	23.1	23.9	26.8
Potatoes	267.7	276.6	317.5	309.0	309.9	299.7	283.3
Sugarbeet	36.2	49.0	49.7	47.2	27.6	23.8	18.5

The extent of this increase in production is plainly illustrated by the figures given below:

TABLE III. — *Average Yield per hectare (according to the information given by the Agricultural Correspondents of the Central Statistical Office).*

Products	1926	1927	1928	1929	1930	1931	1932	1933
Wheat	11.6	13.0	13.9	14.1	15.2	13.5	10.8	13.4
Rye	10.4	11.6	13.5	13.6	13.8	11.5	11.3	11.9
Barley	12.6	13.2	15.3	15.0	13.5	13.2	12.9	13.4
Oats	11.7	13.0	14.7	16.0	12.7	13.1	13.0	13.7

In the sphere of stock farming a similar phenomenon of increase in the head of live stock is found:

TABLE IV. — *Numbers of Live Stock in Poland (in thousands).*

Live Stock	1929	1930	1931	1932	1933
Cattle	9,057	9,399	9,786	9,461	8,985
Pigs	4,829	6,047	4,321	5,844	5,753
Sheep	—	2,491	2,599	2,488	2,557

In face of this increase in production the internal consumption proved extremely inelastic in the course of the years of prosperity while it has shown very marked shrinkage during the years of crisis. The excess of exports over imports became a regular feature, although during the post-war years any such excess of exports had been as regards cereals—with the sole exception of barley—accidental in character.

TABLE V. — *Excess of Exports (+) or of Imports (—)
of Crop Products in Poland (thousands of quintals).*

Products	1926/27	1927/28	1928/29	1929/30	1930/31	1931/32	1932/33
Wheat	— 2,100	— 2,240	— 666	— 20	+ 816	+ 624	— 138
Rye	— 433	— 965	+ 561	+ 3,299	+ 2,666	+ 1,874	+ 2,349
Barley	+ 903	+ 647	+ 1,863	+ 2,627	+ 1,269	+ 1,427	+ 1,137
Oats	— 360	— 142	— 43	+ 788	+ 62	+ 125	+ 164
Wheat Flour	— 68	— 74	— 1	+ 54	+ 268	+ 47	+ 3
Rye Flour	+ 21	— 6	+ 27	+ 108	+ 620	+ 386	+ 239

In the course of the years 1927-28 Poland became, in respect of cereals, an exporting country, although previously its character as such had not been clearly defined. It is true that in the course of the years 1932-34 it was only as a result of the efforts of the preceding years that the level of production could be maintained, seeing that the intensification process had come to an abrupt end in 1930 and that the consumption of fertilisers had fallen with extreme rapidity. It is also true that, with conditions of normal consumption of crop products on the internal market, Polish production in the course of the last three years would have been just adequate to cover Polish demand. It remains, however, none the less true that the improvement in conditions of production in agriculture, especially the closer correspondence between prices of commodities produced and those purchased by farmers, will act finally as a stimulus of agricultural production, by enabling the farms to consume larger quantities of artificial fertilisers. After having repaired the results of the war devastation, Poland became decidedly an exporting country of agricultural products, and this characteristic seems to be becoming a stable one for the years to come.

C. *Economic Conditions of Agricultural Production in Poland.*

Having examined the comparative volume of agricultural production in Poland, there remains to consider the question of values, and to conclude with a review of the conditions which have affected Polish agriculture in the course of the last four years.

In the first place the question arises of the prices of agricultural products in their relation to costs of production and to the indebtedness of farms. The fall of agricultural prices evidently becomes a factor of economic disequilibrium and affects the economic conditions of agricultural production, the more so that the simultaneous fall of the prices of commodities of rural consumption, of wages of farm workers, and of fiscal charges is less marked, while farm indebtedness becomes more onerous. A fall in prices of agricultural products accompanied by a proportional decline in all the factors constituting costs of production would lead only to passing and inconsiderable difficulties. In fact while the fall in prices of agricultural products is in itself due to disproportions between the production and consumption of these products on the world-market—a pro-

blem the causes of which are too complicated to be considered here—the extent of the agricultural crisis in a particular country depends on the difference between the fall of agricultural prices and that of the costs of agricultural production.

The relation between the prices of agricultural products on the internal market of Poland and on the world market is shown on the following table:

TABLE VI. — *Prices of Cereals on the Polish Market and in Various Countries*
(złoty per 100 kg.).

Wheat.

Years	Warsaw	Berlin	Prague	Hamburg c. i. f.	Chicago
1927	54.3	56.0	63.5	—	45.5
1928	52.6	49.7	57.3	48.3	43.3
1929	45.3	48.2	48.5	44.7	40.5
1930	35.8	54.6	44.3	34.8	31.9
1931	27.6	52.8	41.4	24.6	22.1
1932	27.4	48.7	41.7	21.5	17.5
1933	29.5	39.7	41.8	18.5	19.3

Rye.

1927	43.7	52.8	60.2	—	37.4
1928	42.6	50.7	55.7	45.6	39.9
1929	29.6	40.8	38.6	38.7	36.4
1930	19.4	34.5	26.0	26.2	23.3
1931	23.9	38.7	36.0	16.9	13.7
1932	21.9	37.8	33.0	16.3	13.0
1933	17.2	32.0	22.9	11.8	15.5

Years	<i>Barley</i>			<i>Oats</i>			
	Warsaw	Berlin	Prague	Warsaw	Berlin	Prague	Chicago
1927	41.4	51.1	50.7	38.3	64.2	46.1	33.4
1928	43.2	52.2	55.4	42.2	48.0	48.8	38.9
1929	31.7	44.1	42.3	29.5	39.0	38.5	29.9
1930	25.5	41.2	36.1	20.6	32.5	27.5	24.8
1931	25.1	40.4	37.4	25.1	33.1	33.7	17.4
1932	21.0	37.9	26.2	20.9	31.2	24.9	12.9
1933	16.2	37.3	24.2	15.1	28.2	19.9	14.3

In contradistinction to what occurred on the internal markets of the greater number of the countries of Central Europe, the price level of Polish agricultural products before the crisis was, if not the same as at least very near to, that of the world market as shown in Table VI by the Chicago quotations and the c. i. f. prices at Hamburg. Also, in the course of the crisis, the price level of cereals on the Polish internal market had fallen—with the exception only of wheat, the production of which had barely covered the internal consumption in the

course of the last few years—proportionately to the fall of prices on the world markets. In 1933 the level of prices quoted at Warsaw, which were a little higher than the prices ruling on the other markets of the country, *e. g.*, at Poznan, was only slightly higher than the level of prices on the world markets. However, even this price level which is very close to the price level on the open markets could not be maintained, as regards rye, oats and barley, without intervention on the internal market and apart from a system of export premiums. This is clear since if the level of internal prices had to be adjusted to the world price level, it would be essential to take into consideration costs of transport from the Polish market to the importing countries, *i. e.*, the price would have to be about 5 or 6 *zloty* lower than the Hamburg quotations. Thus, cereal prices on the internal market, although lower than the quotations on the majority of the markets of Central Europe, were still higher than the price level which might have been established if the Polish market had remained quite open in respect of the world market.

The problem of the relation between the movement of agricultural prices on the Polish internal market, and that of agricultural prices on the world market and on some of the closed markets of Central Europe, has been treated here merely to show that cereal prices in Poland have followed, with the exception of wheat, the price movement on the world market and that their level has been about 25 to 40 per cent. higher than the world price level, which might have been established instead if the internal market had not been protected by a system of export premiums and by interventions in the sphere of demand.

It is now necessary to pass on to the essential problem of the agricultural crisis in Poland, *viz.*, the problem of the relation between the prices of agricultural products and the costs of production in agriculture. Partial illustration of this problem is to be found in the following table, including the price index-numbers of the products sold by the farms, of the commodities of rural consumption, and of the wages of regular farm workers. The table covers only a part of the problem, since it does not include the charge of farm indebtedness, nor the fiscal charges and those arising from social legislation, nor the prices of those commodities of rural consumption which are not direct costs of production, but nevertheless play an important part in the budgets of farming families.

TABLE VII. — *Price Movements of Commodities Sold and Purchased by Farmers and Wages of Farm Workers.*

(1928 = 100)

(a) *Products sold directly by farms.*

Years	Total	Crop Products	Live Stock Products	Dairy Products
1928	100	100	100	100
1929	89.5	75.5	100.5	98
1930	67.6	50.0	86.9	79.4
1931	59.5	57.7	56.7	70.1
1932	48.9	49.9	43.8	55.0
1933	42.6	41.1	42.5	46.7

(b) *Products purchased by the farmers.*

Years	Artificial fertilisers and manufactured goods for agricultural production
1928	100
1929	101.1
1930	98.6
1931	90.7
1932	81.4
1933	72.9

(c) *Wages paid to regular farm workers.*

Years	In terms of zloty	In terms of quintals of rye
1928-29	100	100
1929-30	70	112
1930-31	56	131
1931-32	62	106
1932-33	48	105

It would thus appear that in the course of the years 1929 and 1930 the price fall of commodities sold by the farmers had been much shareper than that of the purchased commodities which constitute the direct costs of agricultural production. Taking the year 1928 as 100, the difference between the price level of commodities purchased and sold by the farmers was:

11.6 per cent	in 1929
31.0 " "	" 1930
31.2 " "	" 1931
32.5 " "	" 1932
30.3 " "	" 1933

While in 1933 the prices of commodities purchased by the farmers had fallen by 27.1 per cent. as compared with 1928, the price level of raw materials and of manufactured goods had fallen by 39.2 per cent. on an average; raw materials and goods manufactured by the cartelised industries, on the other hand, were subject to a fall of 9.1 per cent. only. Hence the divergence between the prices of products sold and bought by farmers was due to the stable price level of the products of the cartelised industries. The problem is of great importance for our enquiry since it is at the base of the national policy for combatting the crisis.

As already stated, apart from the commodities directly employed for agricultural production, the costs of agricultural production consist of such factors as fiscal charges, charges arising out of social legislation, and the interest on debts. Moreover, in the course of the years 1927 to 1929 the investments in agricultural production had become very large. According to estimates made investments in agricultural production have accounted for more than 40 per cent. of the investments made in the whole production of Poland, also they could not be amortised except in the course of a period of some decades. These investments included to a very large proportion the improvement of lands and buildings for which the

farmers had to obtain long term credits, but also a large proportion had gone into the mechanisation of farming. To cover this last outlay, agriculture had had the benefit in prosperous years of a generous short term credit, both trade and banking. The price levels of 1927, 1928 and even 1929 seemed to secure the possibility of amortisation of these investments within a short period.

In the course of the years 1927-29 and even 1930 a very rapid expansion of agricultural credit operations has been noticeable. The very abrupt fall of agricultural prices had by 1931 frozen a large part of the short term credits granted to the farms, the more so as they had been deprived of floating capital in the period of inflation, while in the period of prosperity the accelerated pace of investments, resulting from the large profits obtained from agricultural production, had not given scope for the development of a process of capitalisation among the farmers. In fact the percentage of bills not accepted at the banks had risen to 11.7 per cent. in 1930 and to 13.1 per cent. in 1931 of the total number of accepted bills.

The problem of indebtedness may be illustrated by some figures. Exact data are available only in respect of farms from 2 to 50 hectares in area. The indebtedness of these, taking 1926 as 100, had increased to 135.8 per cent. in 1927, to 182.2 per cent. in 1928, and to 220.4 per cent. in 1929. In general the indebtedness of the large estates had increased more slowly. The development of the financial situation of the farms of 2 to 50 hectares in the administrative area of Warsaw, to give merely an example of the general situation may be shown in the following manner:

TABLE VIII. — *Indebtedness in the Administrative Area of Warsaw (1)*
(złoty per hectare).

Years	Number of farms	Assets złoty	Liabilities		Net Income złoty
			złoty	in % of assets	
1927	102	3,108	207	6.6	368
1928	102	3,938	265	6.7	281
1929	84	3,939	366	9.3	246
1930	66	3,476	380	10.9	139
1931	22	2,982	472	15.8	129

The net income includes also the value of the work done by the farmer himself and his family, and on deducting this value, a very small sum representing the money income of the farms per hectare would be reached. The situation became the more serious as the bankruptcies of the farms, involving a sale by auction of the farm itself, led, in view of the want of free capital in the country, to the complete devalorisation of a large section of the credits granted to agri-

(1) Results of an enquiry of the Department of the Economy of Small Farm Holdings. Summary by M. Antoniewski in "Rolnik Ekonomista," 1934.

culture, and threatened the financial structure of the country. In 1931 cases of judiciary liquidations of farms, yielding to the creditors some 30 to 40 per cent. of the value of the debts, became almost a daily occurrence, although the ratio of the liabilities to the assets did not exceed, even in the cases of sale by auction, 40 to 50 per cent. on an average. The fact was that the absence of capital ready for investment in agricultural production lowered the prices of land below its value measured by the profits on production, and especially when the offers of land had become abnormally numerous by the fact of the increase in the number of liquidations of farms.

(*To be continued*).

André JALOWIECKI.

HAIL INSURANCE IN YUGOSLAVIA

Private insurance against hail damage was operated in Yugoslavia in 1932 by the following societies:—

"Croatia" Co-operative Insurance Society, Zagreb.

"Dunav" Insurance Company Limited, Zagreb.

"Herceg-Bosna" General Insurance Company, Belgrade.

"Jugoslaviya" General Insurance Company, Belgrade.

"Riunione Adriatica di Sicurtà," Trieste.

"Rossija-Foncière" Insurance and Reinsurance Company, Belgrade.

"Sava" General Insurance Company, Limited, Zagreb.

"Slaviya" Yugoslavian Insurance Bank, Lubliana.

"Triglav" Insurance and Reinsurance Company, Zagreb (1).

In Yugoslavia there is an insurance Pool in existence: in 1932, 86 per cent. of the total proceeds of hail insurance business belonged to the companies grouped in the Pool; about 14 per cent. of the total proceeds belonged to the two societies, Croatia and Slaviya, which took part in the convention but not in the clearing (2).

The special feature of interest in the organisation of hail insurance in Yugoslavia is that in this country compulsory hail insurance has been partially brought into force.

As early as 1895 a National Institute of Hail Insurance had been founded in Serbia with compulsion to insure, but this institution was ineffective on account of imperfect organisation and inadequate premiums (3).

In 1905 a progressive supertax was introduced taking the form of an additional tax to the land tax and intended as compensation for hail damage done; this additional tax, however, aroused wide-spread discontent and was in consequence abolished.

(1) *Assekuranz-Jahrbuch*. Wien und Leipzig, 1934, p. 407.

(2) *Die Versicherung*. Organ für Versicherung, Hypothekenwesen und Geldwirtschaft, Wien, 5 January 1933, p. 30.

(3) WEISS. Die Hagelversicherung in der Weltwirtschaftskrise. *Assekuranz-Jahrbuch* 1934, p. 220.

In 1923 a law was passed in accordance with which there had to be instituted in each province an insurance credit against hail, which might also be worked by several provinces jointly.

The following are the main provisions of this law (1).

Provincial hail insurance credit must be administered by a provincial Council, or, if the general meeting of the province so decide, by a society on a co-operative basis or by a share company, provided that such a company is already in existence. The capital required for such administration must be drawn from the following sources; (a) sums received each year for hail insurance, *i. e.*, the annual contributions paid by the owners of crops and fruit insured; (b) subsidies granted each year by the Minister of Agriculture and Waters to the provinces on the basis of a special credit allocated for the purpose on the annual budget of the Ministry; (c) subsidies the total of which must be entered on the provincial budget voted by the Council of the province. This capital was assigned to meeting the compensation payments relating to the damage caused by hail to insured crops and fruit crops as well as to the refunding of all other expenses arising out of the giving of effect to the law in question.

The Provincial Council or the institution authorised by the administration of the insurance credit must fix each year the total of the insurance contribution to be paid per hectare and on the basis of the crop return value declared for the insurance of each category of sown crops or fruits.

In accordance with this law the minimum crop return value per hectare acting as basis of the insurance, was for the various crop categories:

(a) for barley, oats and buckwheat	500 dinars
(b) for wheat, rye and large grained barley	700 »
(c) for maize	800 »
(d) for hemp and flax	1,200 »
(e) for orchards	1,200 »
(f) for turnips	1,500 »
(g) for vines	1,800 »
(h) for pot herbs and olive-trees	2,500 »
(i) for tobacco	2,000 »

The owner was empowered by this law to insure his crops and his fruits for a higher sum provided that it does not exceed the real value of the return per hectare of the land in question. The permanent provincial Committee had to forward to all the communes of the province at latest by 1 March the list of the totals of the contributions for all the categories of sown crops and of fruits which could be insured against hail. The communal authority, on receiving the list, had, within a period of five days, to communicate it to all the landowners concerned in the commune. The insurance came into force only from the date on which the landowner submitted to the authority his declaration of insurance in due form (not later than 1 May) and on which he paid the contribution due from him. For vines the insurance began to run from the first budding only, and for orchards from the flowering of the fruit trees. Compensation for hail

(1) *Sluzbene Novine*, No. 189 (21 September 1923).

damage was to be paid after expert valuation. If the sum fixed by the valuer was higher than the declared value and the insured sum, compensation was to be paid in proportion to the declared value and the insured sum, and if the figure was lower, according to the valuation.

In accordance with the provisions of this law a permanent fund had been established at the Ministry of Agriculture and Waters for subsidising the provincial credit establishments for hail insurance, with a capital of 100,000,000 dinars which was to be placed by the Ministry of Finances within a period of three years in the State Agricultural Bank to be founded in accordance with a special enactment, and, until such law had come into force, in the Mortgage Bank of the State. In addition to these funds there was to be formed a State reserve fund and in each province a provincial reserve fund.

On the basis of this law in 1928 the Administration of the Littoral authorised the foundation of a hail insurance institute; in 1930 however this institute was dissolved at the same time as the law already referred to was abrogated.

In 1931 a new law was enacted making obligatory the insurance of sowings and of crops against hail. Compulsory insurance in Yugoslavia is regulated at present on the basis of this fundamental law (1).

By this law, dated 10 February 1931, the Minister of Agriculture is empowered, on the proposal of the prefects of the provinces, each for his own administrative area, to make enactments in respect to compulsory insurance of sowings and crops, and for the allocation of the expenses required for the carrying out of this insurance, that is to say, the expenses incurred by each landowner or holder in the endeavour to establish an agreed contribution per unit of cultivated area.

In accordance with this law, every prefect of province is expected to issue for his province regulations for bringing into force compulsory insurance and for the allocation of the expenditure relating to such insurance.

All regulations and amendments to regulations are submitted to the approval of the Minister of Agriculture.

On the basis of this law the following ordinances have been issued:—

(a) Ordinance of 4 January 1932, relating to compulsory insurance against hail of sowings and crops in the province of the Littoral (Primorsk-Banovina) (2).

(b) Ordinance of 18 January 1932 relating to compulsory hail insurance in the Danube province (3).

(c) Ordinance of 19 February 1932 relating to compulsory hail insurance in the province of Urbatz (4).

(d) Ordinance of 28 January 1933 relating to compulsory hail insurance in the province of Zeta (5).

(e) Ordinance of 6 March 1933 relating to compulsory hail insurance in the province of the Save (6).

(1) *Sluzbene Novine*, No. 43 (25 February 1931).

(2) *Sluzbene Novine*, No. 11 (15 January 1932).

(3) *Sluzbene Novine*, No. 18 (25 January 1932).

(4) *Sluzbene Novine*, No. 51 (4 March 1932).

(5) *Sluzbene Novine*, No. 27 (6 February 1933).

(6) *Sluzbene Novine*, No. 54 (9 March 1933).

Up to last year compulsory insurance has been brought into force only in the Save province.

The following are the provisions contained in the Ordinance introducing this type of insurance into the Province of the Save.

Hail insurance of sowings and crops in the Save province must be effected through the intermediary of an institution established for the purpose in connection with the Agricultural Section of the Royal Administration of the Province. This institution the office of which is fixed at Zagreb is called "Establishment for Hail Insurance of Sowings and Crops in the Province of the Save."

This institution is thus a self-governing institution of the Province in direct subordination to the Royal Administration of the Province, Agricultural Section.

The sphere of activity of this institution includes all the territory of the Province.

The insurance financial year begins on 1 September of each year and ends on 31 August of the following year. All the main sowings and crops on the area registered as ploughlands (*oranice*) in the land register are considered as insured and also all vineyard products with the exception of vineyards planted in hybrids (*nasadenih hibridina*); these latter are not considered as insured in any case. Insurance of sowings and crops on the arable lands extends from 20 April till the time of harvest or gathering; the insurance of clover, lucerne, peas, vetches for stock feed, up to the beginning of flowering; insurance of clover, lucerne, peas and vetches for seed extends from the full blossoming time till the reaping; the insurance of potatoes up to flowering, that of vines from the appearance of the buds up to the vintage.

The prefect (*Ban*) of the province, on the proposal of the Agricultural Section forming part of the Royal Administration in his charge, fixes the amount of the total payment (insurance premium) per cadastral *jutro* (unit of measure of area) which must be paid yearly by the landowners or by the holders for allocation to hail insurance. This payment must be effected by the landowners or holders to the competent commune or to the urban municipal administration between 1 September and 31 December. Any such payment not made at the time stated is to be recovered by the commune or by the urban municipal administration by means of distraint made on the landowner or holder, not later than 31 March of the following year.

On the basis of this Ordinance the prefect of the province has drawn up the regulations for application of the above Ordinance (*Pravilnik*).

The organisation described may be considered as a continuation of the territorial institution which had previously exercised activity in the same province (1).

As already stated, up to 1934 the compulsory insurance against hail damage had been applied only in the Save province. In the other provinces, as the compulsory insurance prescribed by the legislative provisions has not come into force, the situation is a temporary one which acts as markedly limiting the activity of the private insurance companies operating this branch of insurance. The Vardar Company decided in the course of 1932 on suspending activity.

(1) WEISS, Op. cit., Assekuranz-Jahrbuch 1934, p. 221.

Hail Insurance in 1932.

1 Companies	2 Number of policies	3 Premiums	4 Charges	5 Totals of 3 and 4	6 Insured capital	7 Declared losses		8 Losses compensated	
						Number	Amount	Number	Amount
Croatia	488	276	93	369	7,153	109	1,117	109	425
Dunav	403	174	82	256	6,507	135	1,032	135	206
Herz.-Bos.	915	516	231	747	18,715	286	3,556	286	868
Jugoslaviija	933	729	263	992	20,625	255	3,162	86	524
Rimione	253	411	145	555	11,645	86	1,738	255	586
Ros.-Fonc.	401	447	167	611	13,106	198	2,557	198	624
Sava	102	64	31	95	2,611	15	79	15	23
Slaviija	548	178	79	257	6,147	89	1,029	89	347
Triglav	166	106	34	140	2,656	32	205	32	72
<i>Total 1932</i>	<i>4,289</i>	<i>2,901</i>	<i>1,125</i>	<i>4,022</i>	<i>89,165</i>	<i>1,205</i>	<i>14,475</i>	<i>1,205</i>	<i>3,675</i>
" 1931	7,477	4,520	1,697	6,217	134,179	1,594	18,350	1,594	5,760
" 1930	9,753	6,983	2,452	9,436	193,428	1,200	13,721	1,200	3,504
" 1929	15,388	10,182	3,940	14,123	314,571	1,757	19,384	1,757	3,652
" 1928	14,026	12,843	5,020	17,869	371,393	1,941	38,524	1,941	9,379
" 1927	11,172	9,787	3,207	12,994	247,286	1,588	21,524	1,588	5,808

The companies forming the Pool renew the relative agreement from year to year. The private companies operating in the Save province, as soon as the compulsory insurance came into application, abandoned their activity in the province in respect of that branch of insurance, with the exception of two insurances on hemp (1).

The following table reproduces the most important data relating to the private companies operating hail insurance in Yugoslavia in the course of 1932, as well as the totals relating to the years 1927-1931.

It will thus be seen that in the course of 1932 a perceptible decline is to be noted in the activity of private companies operating this branch of insurance.

The steady fall in the prices of farm products and the marked decrease in the profit capacity of agriculture has reacted unfavourably on the turnover of the companies in question (2).

In addition to these factors there must be taken into account the uncertainty arising from the existence of the legislative provisions framed to introduce compulsory hail insurance but not yet applied in 1932, and by the law on the protection of agriculture; this law has occasioned among the insurance companies some apprehensions in regard to the acceptance of premiums covered by bills of exchange, since on the other hand it was not possible at the time of the conclusion of the contracts to obtain payment for premiums in cash.

The falling off of business became more marked in 1933. The following are the comparable data relating to 1932 and 1933 (3).

COMPANIES	Number of policies		Difference + or — in 1933	
	1932	1933	absolute	%
Croatia	487	281	— 206	— 42
Dunav	406	472	+ 66	+ 17
Herceg	924	1,010	+ 86	+ 9
Jugoslavija	932	827	— 105	— 11
Riunione	258	189	— 69	— 26
Russia-Foncière	461	326	— 135	— 29
Sava	94	81	— 13	— 14
Slavija	548	323	— 225	— 41
PRODUCTS INSURED	Number of policies		Difference + or — in 1933	
	1932	1933	absolute	in percentage
Cereals	3,957	3,282	— 675	— 17
Wine	187	133	— 54	— 29
Hops and tobacco	84	2	— 82	— 97
Hemp	9	84	+ 75	+ 833
PRODUCTS INSURED	Premiums (without charges)		Difference + or — in 1933	
	1932	1933	expressed as %	
	(dinars)			
Cereals	2,442,941	2,435,243	— 0.3	
Wine	467,810	240,095	— 49.0	
Hops and tobacco	62,338	1,050	— 98.0	
Hemp	71,880	451,714	+ 53.0	

(1) *Die Versicherung*, 30 August 1934, p. 558.

(2) *Die Versicherung*, 5 January 1933, p. 29.

(3) *Die Versicherung*, 26 October 1933, p. 741.

A considerable decline is to be noted in respect of the hail season of 1934 up to 1 August as compared with the hail season of 1933 to the same date, amounting to nearly 50 per cent. decline for the premiums and charges and 45 per cent. for the sums insured (1):

	1933	1934
Number of policies	3,455	2,382
Premiums dinars	3,091,077	1,488,754
Charges »	1,182,723	572,887
Sums insured »	87,662,217	40,140,127
Losses declared »	10,566,253	4,415,133
Number of persons making claims	989	598

It has not yet proved possible to make any statement in respect of the figures of compulsory hail insurance in the Save province.

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MONTHLY BULLETIN

OF

AGRICULTURAL ECONOMICS AND SOCIOLOGY

NOTES ON THE USE OF FARM ACCOUNTANCY DATA IN COMPARATIVE ECONOMIC INQUIRIES

The agricultural depression and the various measures which have been and are being taken by the Governments and by the producers' organisations with a view to improving the economic conditions of the farmers, call for a close study of the exact situation with regard to the production and marketing of the various agricultural commodities. In trying to help a certain branch of agriculture it is essential to know with as great a precision as possible all the facts bearing upon the position of this particular branch of the agricultural industry. Only by carefully weighing, in the light of all the available information, the relative advantages of the production of a given commodity in relation to that of other competing crops, is one in a position to decide upon the way in which the available means and resources should be employed for ensuring to government intervention or to concerted action on the part of the farmers themselves, the greatest and most lasting success.

It is true that, at present, in a world broken up into a vast number of more or less isolated national economies, surrounded by trade barriers and each seeking by means of deliberate planning and control to achieve, as far as possible, a condition of economic self-sufficiency, considerations of relative costs and advantages have largely ceased to play the part they used to play when world economy was based on free competition. But it is equally true that one cannot indefinitely ignore so fundamental a proposition of economics as the necessity of achieving the maximum effects with the minimum outlay, without reducing one's standards of life and civilisation and heading to ruin. If planning, now being applied mostly as an expedient adopted to meet an emergency situation, is to become a successful economic system and to replace competition, it will have, both nationally and internationally, to take into consideration the basic maxims of economy in effort and outlay, which is but another way of saying that planned economy, no less than the competitive system, will have to be guided by considerations of relative costs and advantages, which, in their practical application, may be subject to certain compromises and modifications due to political and other considerations, but which cannot be ignored or dispensed with in a world which needs progress.

All this applies to farming with particular force, since the precarious position of agriculture in the present depression forced all countries to take especially drastic measures of intervention in this domain. Agriculture, only two or three years ago the least organised industry, now is probably one of the most thoroughly controlled in its most vital branches in most countries; and both nationally and internationally many exceedingly complicated problems and situations have been produced by the isolated acts of emergency intervention taken in various countries on behalf of particular branches of farming. In some cases, as a result of these emergency measures, situations have been created which, in the long run, would be untenable and would need revision and re-adjustment. Gradually, all that is in the nature of purely temporary emergency measures in agricultural planning, and may be essentially anti-economic, if considered in general perspective, will have to be modified and adjusted; and these adjustments and modifications, which will have to be made in order to make planning effective and to ensure economic progress, will have to be made in the light of an exact knowledge of the economic, social and natural factors which make the production of a given commodity more or less remunerative under given conditions.

More than ever, therefore, there is need of a close study of the conditions of production of the different agricultural commodities. Every reliable source of information bearing upon these conditions must be drawn upon for its contribution to this inquiry, and the more intimate are the details of these conditions which can be gathered from an examination of the available data, the more valuable may be the light they can shed upon the problem of comparative advantages, which, as we have pointed out, is in effect the problem of the most efficient use of the country's resources in accordance with the basic maxim of economics.

A new programme of work of the Institute was adopted by the XIIth General Assembly in October 1934 in its resolutions upon the Report presented to it on behalf of the Permanent Committee by Dr. H. C. Taylor. This programme involves the concentration of attention upon the study of the conditions of production and marketing of various agricultural commodities, with a view to bringing out the comparative advantages possessed by different countries or regions in respect of the various products entering into international trade. Every branch of the work already being done by the Institute will be called upon to make its contribution to the new programme. A branch of work which will have a special contribution to make to the study of the conditions of agricultural production in various countries or regions is the economic analysis of the results of farm accountancy, already being collected or to be collected by the Institute.

The results of farm accountancy can serve the purpose of research in the problem of comparative advantages either as such, that is, as data concerning the economic and financial situation of the farm as a unit, or as costings, derived from farm accountancy and showing the specific costs of the various commodities produced.

At first sight, it would appear that, in commodity studies, aiming at determining the relative advantages of production of various crops in different countries or regions, it would be the comparison of specific costs of production that would

be of decisive importance, and that farm accountancy, as such, would have little to contribute to these studies. This view, in spite of its apparent plausibility, cannot be accepted on technical grounds.

The reasons for rejecting the method of international or interregional comparison of specific costs as a basis for the determination of comparative advantages of production, are as follows.

Agricultural costings are the result of rough approximation, since, with the relatively unimportant exception of single-crop cultivation or of primitive animal husbandry, the farm is a highly complex combination of branches of production, in which a very large part of farm expenses and of general costs represents overhead charges. There exists no satisfactory method of distribution of these charges among the various branches of production, so that they are attributed to the various crops more or less arbitrarily. The extent to which the results of costings can be affected by this arbitrary distribution of charges can be judged from the fact that such overhead charges—exclusive of labour costs, which also cannot be exactly attributed to the different crops—represented, according to the farm accounts of 1930-31, for the mixed farms of Wurttemberg, in Germany, 33.18 per cent. of the total farm costs, and in Switzerland, for the same type of farms, 37.82 per cent.

Under such conditions, specific costs cannot be determined with a degree of approximation which would enable satisfactory comparison to be made as between different localities or different types of farms, even though they may be sufficiently accurate for work which does not depend to the same extent on the accuracy of the estimates. Thus, costing data, even rough, can often serve as a satisfactory guide for the determination of a workable basis for the establishment of fixed minimum prices, but for comparisons, even within the same country, between different systems of farming, it may be exceedingly dangerous to trust them.

Even should it be possible to determine specific costs with sufficient accuracy, their international or even interregional comparison would be liable to mislead as to the comparative advantages of production of a given commodity. These advantages would depend upon the margins between prices and costs, which would be available for the producers. Supposing, however, that the prices and the costs of production were the same in all cases, and that the margins, accordingly, were equal, it would not necessarily follow that none of the producers would have any advantages over the others. Whether or not, in spite of all, some producers would enjoy advantages over the others, would depend upon the organisation of farming in every particular case, and more particularly upon whether the crop is grown on peasant family farms or on large farms dependent on hired labour; whether the production of a given commodity forms a necessary element of a system of mixed farming or is the principal object of the farm business, etc. Given a certain margin over the estimated costs of production of the crop in question, the family farm, or a mixed farm in which that crop forms a necessary part in the rotation, would enjoy a considerable advantage over a farm employing hired labour or one of which the growing of that particular crop is the principal object.

The information concerning the details of the economic and social organisation of the production of various agricultural commodities is only partly available in the general statistical sources, and the results of farm accountancy are often needed to supplement them and to help in their interpretation. Thus, the data concerning, say, the distribution of holdings according to size, showing the prevalence of certain size-groups, as well as, in some cases, their division into peasant farms and large farms, might be obtained from general statistical sources; but the more intimate and, sometimes, exceedingly important details concerning the organisation of the farming business and its reaction to the various influences to which it is subject, such as measures of encouragement and protection, changes in the value of money or in credit conditions, taxation, etc., can only be revealed by the systematic collection and study of the results of farm accountancy.

When we speak of comparative advantages we really mean a comparison of the conditions of production and marketing which make the cultivation of a certain crop more profitable either than that of another crop in the same locality or than that of the same crop in a different locality. In the former case we deal with the competition of two or more different crops for the use of the farmer's land, capital and labour in preference to some other crops. In the latter case, the same commodity produced in various localities appears in competition on the market, and the competitive capacity of the lots of different origin depends upon the difference in the conditions under which they are produced. We obtain a general idea of these conditions from a number of different sources: legislative and administrative provisions bearing upon agriculture in the countries concerned, statistics of prices, of the distribution of crops, of yield and of total production, systems of tenure and cultivation, labour conditions, etc.; but the way in which they affect the economic position of the various types of farms, the way in which the organisation of the farm business reacts to the various influences to which it is subject, is a matter which only the possession of material supplied by farm accountancy can demonstrate conclusively.

The nature of the statistics based on farm accountancy makes them, on the one hand, particularly valuable as a source of objective empirical data bearing upon the economic organisation of farming and upon its evolution under the influence of various factors. On the other hand, the fact that these data cover only a relatively very small fraction of the total number of farms and do not always represent all the groups or types of farms in the country concerned, makes it necessary to use them with the greatest circumspection. In the first instance, the results of farm accountancy must be carefully sifted according to the degree to which they may be considered as fair samples of the universe to which they belong. In some cases, even numerous observations may not be satisfactory from the point of view of statistical sampling; in others, to take the other extreme, the continuous study over a number of years of a relatively small, but stable, group of farms, which does not pretend to be representative of anything but itself, may bring to light many interesting and important factors and reveal tendencies which are not confined to that group alone.

Speaking here of the limitations to which farm accountancy data, as material for economic research, are unavoidably subject, one must refer to the fact that,

owing to technical reasons, such data become available with a very considerable delay. The statistics based upon the results of farm accountancy are essentially a by-product of the work carried on by the various farm accountancy centres with the object of helping the farmer to rationalise and more efficiently to control the management of his business. Between the moment at which the local centres obtain the book-keeping results of the individual farmers, after the close of the business year, and the moment at which, on these accounts being checked and closed, and the necessary analysis and tabulations being performed, the detailed results necessary for economic research become available in the country concerned, there usually passes at least a year. Then, the national centres, which supply their data to the Institute, are in a position either to fill the Institute's questionnaires or to send to it their own publications, or both. This means that, at the moment of writing, in May 1935, the Institute actually gets farm accountancy data from the contributing countries for the year 1932-33, and that some of the materials for which it depends on published data, are not yet available, since the publications concerned have not yet appeared. As the material thus obtained requires at least 6 to 9 months for its analysis and tabulation before it can be used in comparative international studies, it cannot be available for the purpose of such studies till, at the best, late in 1935. Obviously, therefore, much as the investigation of farm accountancy data may give as an instrument of economic research, both on a national and on an international scale, in shedding light upon the effects upon farming in its various branches of changing economic conditions, etc., it cannot be looked upon as always ready at hand to answer a pressing question of the moment or to make forecasts of the future. Yet, by showing how farming is organised and how it had reacted in the recent past to certain influences, the results of farm accountancy, even if they become available with a certain delay, especially for comparative international studies, can still help in finding answers to current questions.

Moreover, it must always be borne in mind that, as a rule, the results of farm accountancy cannot, as such, constitute the sole source of material for economic research, and that they are but one of the many different sources available for such investigations. As a source of information, farm accountancy, on the one hand, needs to be supplemented by other materials; on the other hand, in so far as it is the only source of information concerning the details of the organisation and evolution of farming, it is a highly useful and sometimes indispensable supplement to other materials, because by the application of sampling it enables the research worker to perceive these details by supplying him with enlargements of some parts at least of the general picture he studies.

One of the most important conditions of the successful use of farm accountancy data in economic research is the availability of reliable price statistics for the countries or regions concerned. This is necessary because farm accountancy deals with the results of the farm business in terms of money, and the proper interpretation of the changes it reveals, say, in the gross returns from a given branch of production, is only possible by reference to the movement of prices. An increase or a decrease in the returns, for example, of dairy production, may

be due either to increased or diminished output, or to a rise or fall in the prices of dairy products, and as no indications of the quantities produced are generally contained in farm accounts, only by eliminating the price factor is one in a position to judge of what may be an important structural change in the agricultural industry.

Used in conjunction with reliable price statistics, farm accountancy can give a very true picture of the real trends of evolution in farming, of the changes in the relative position of the various branches of production and of the effects upon the different types of farms, upon their structure, their output and their financial position, of various measures of encouragement and protection, of financial and monetary policies, etc. These effects, failing farm accountancy data, can only be guessed at on the ground of general information.

Thus, even if farm accountancy cannot supply internationally or interregionally comparable financial data, referring to specific costs of production, to the relative profitability of the different branches of farming, etc., if used with the necessary circumspection, in combination with other data and, more particularly, with reliable statistics bearing upon prices, the distribution of land according to uses and to crops, the distribution of holdings, the internal and foreign trade in agricultural products, etc., it can supply exceedingly valuable material for judging of the comparative advantages enjoyed by the various branches of production in different localities, as well as by the various competing crops in the same locality. What is exceedingly important is that farm accountancy enables us to see how the conditions of production of various agricultural commodities and, accordingly, the comparative advantages they give, are affected by measures of regulation and control or by other influences, such as the development of new markets, the appearance of alternative supplies, changes in monetary conditions, etc. In all these cases, as well as in judging of the financial position of the agricultural industry in its different branches, that is, of its being able or not to pay its way, and of the extent of its paying capacity—a question of basic importance in all inquiries bearing upon comparative advantages—farm accountancy supplies information which cannot be obtained from other sources. Its importance is also exceedingly great in all statistical research bearing on the consumption of agricultural products, since it is only by referring to farm accounts that one can obtain, by the method of sampling, an empirical basis for estimating the proportion of the various agricultural commodities consumed or transformed on the farm itself, as distinguished from the part brought to market.

It is practically impossible to enumerate and to discuss in abstract all the uses to which economic research, in expert hands, can put the results of farm accountancy in the study of various agricultural problems. As well one might ask one to tell what are the problems which can be solved by the application of the infinitesimal calculus in mathematics. Practical research puts a concrete problem before the student, and if he is in command of a number of instruments of research, he uses the one most suited to his purpose, considering its special characteristics and its necessary limitations.

Farm accountancy data, either obtained by the method of sampling or resulting from the monographic study of a small group of farms, cannot be used

as the only source of material in agricultural economic research. Used as supplementary material, they enrich the equipment of the student considerably by enabling him to gain insight into such aspects of the problems dealt with which would not be gleaned from any other sources.

George PAVLOVSKY.

COMPARATIVE STUDIES OF THE RESULTS OF PIG BREEDING IN DIFFERENT COUNTRIES

The purpose of the following pages is to investigate in the light of farm accountancy results, the comparative advantages of different regions of the world in the matter of pig and pig-meat production.

The period covered is sufficiently long to allow some very important comparisons to be drawn, as the farm accountancy results possessed by the Institute cover the majority of the European countries for 1927, 1928, 1929, 1930 and 1931. The Institute also expects shortly to receive farm accountancy data for the United States of America. It is impossible to have more recent returns than these. The Farm Accountancy Offices themselves require from one to two years, according to circumstances, for working out their statistics based on farm accountancy returns, while the Institute, for its own part, needs at least a year for preparing its own tables. As accountancy results for more recent years come to hand, they will be used so as to increase the value of the present study.

It is proposed to omit all such farm groups as are not truly typical of the region from which they are derived, and to utilise in this study the statistical method, which gives excellent results whenever the conditions which have given rise to the phenomena considered are not completely known. When the farm groupings are sufficiently homogeneous, the results of farm accountancy bring out clearly the influence of geographical situation, altitude and climate; of the distribution of the crops; of the predominance of a particular branch of production; of the dimensions of the farms, etc. With the aid of information, obtained from other sources, such as the import and export trade, prices, etc., an endeavour will be made to state what has been the position of pig fattening in different countries and in different regions over a certain number of years.

In the first place, Table I represents an attempt at a general grouping of the countries, which export pigs and pig-meat. Two countries, Denmark and Poland, figure at the head of the list; both are large importers of young pigs, which they fatten and then export, either as grown live pigs or in the form of pork or bacon. Next come the Netherlands, Lithuania, Sweden and Estonia. In a second group will be found Austria, Czechoslovakia, Switzerland, Finland and Norway. The most noteworthy of the importing countries are Austria and Czechoslovakia. The first imports largely for provisioning the City of Vienna,

TABLE I. — Imports and Exports of pigs and pig-meat in the principal European countries.

Country	Pigs (head)					Pork and bacon (quintals)				
	1927	1928	1929	1930	1931	1927	1928	1929	1930	1931
1. — COUNTRIES EXPORTING PIGS AND PIGMEAT (INCL. BACON).										
Imports.										
Netherlands	89,359	99,490	28,039	26,440	17,357	1,010,528	942,230	688,900	771,300	1,015,575
Denmark	89,359	99,490	28,039	26,440	17,357	2,556,255	2,720,623	2,487,761	3,063,637	3,761,208
Lithuania (2)	65,033	44,591	100,225	155,938	109,206	18,261	13,266	20,378	72,992	231,156
Poland (2)	757,916	1,277,712	952,292	717,050	370,708	181,201	219,333	235,778	354,989	730,471
Sweden	20,100	18,544	122,037	74,430	48,684	243,260	205,766	170,871	257,216	278,060
Estonia	319	768	894	24	9,211	26,592	21,954	12,832	12,330	31,324
2. — COUNTRIES IMPORTING PIGS AND PIGMEAT (INCL. BACON).										
(Imports + exports —).										
Austria	834,137	921,804	767,576	737,151	735,072	116,161	142,312	146,800	117,384	102,282
Czechoslovakia	678,152	853,365	796,701	536,770	187,546	42,470	36,780	40,910	23,892	57,864
Switzerland	7,206	(exp.) (3)	9,380	61,173	13,912	3,767	3,785	3,303	4,510	9,149
Finland	50	6	18	320	8	21,870	25,852	21,901	4,630	10,295
Norway	1,265	98	8,397	17,896	1,400	10,792	29,291	23,364	12,006	4,156
3. — COUNTRY IMPORTING PIG-MEAT AND BOTH IMPORTING AND EXPORTING PIGS.										
(Imports + exports —).										
Germany	+ 46,886	—	782	+ 123,654	— 90,951	— 140,236	+ 276,006	+ 141,288	+ 105,126	+ 160,255
4. — COUNTRY MAINLY IMPORTING PIGS AND EXPORTING PIGMEAT.										
(Imports + exports —).										
Latvia	+ 10,095	+ 3,555	+ 6,509	+ 2,630	— 15,492	— 39,228	— 15,533	+ 4,639	— 14,935	— 17,392
(1) Import of young porkers	11,431	14,915	125,713	90,068	48,976	—	—	—	—	—
(2) Do.	5,332	4,332	8,025	15,302	19,281	—	—	—	—	—

and the second for supplying the requirements of its large cities and industrial centres. Both Switzerland and Sweden are importers on a small scale. Finland in 1931 began an export trade in pork and bacon. Germany has been separately grouped, as in 1927 and 1929 it imported pigs and pig-meat, whereas in 1928, 1930 and 1931 it exported pigs in constantly increasing numbers while maintaining at the same level its pig-meat imports. The last group includes Latvia, which after being an importer of pigs up to 1930, began in 1931 to export pigs on a considerable scale. Except in 1929, Latvia was a pig-meat exporting country. In 1928 the harvests were poor, the numbers of pigs diminished in 1929 and the country was compelled to import pig-meat for home consumption.

There are therefore three groups of countries to be considered: the first devotes its attention to pig fattening with the object of finding markets for the product in other countries, the second imports pigs or pig-meat for home consumption, while the third is not concerned either with the export or import trade in pigs.

The purpose of the production has no clearly marked influence on the number of the pigs, except in Denmark, where the total is twice as high as that in the two other countries, Germany and the Netherlands, which show the highest proportion of pigs per each 100 hectares of land under cultivation. The total number of pigs is very high in Germany, a country which is highly industrialised and possesses great urban centres. In Switzerland and in Austria the number is only half as great as in Germany and in the Netherlands. A further marked reduction, but in the same proportion, is to be noted in Lithuania, Poland, Sweden and Norway and the lowest level (10-15 pigs per 100 hectares) is reached in Estonia, Latvia and Finland. It should be added that, with the exception of Norway, all the countries for which information has been received by the Institute, show an increase in the number of pigs in a higher or less degree during 1931, and this increase may undoubtedly be attributed to the heavy fall in prices, which has induced the breeder to attempt to make good his losses thus caused by increasing his production.

The influence of the price fall is clearly seen in the second part of Table II, which refers to the gross return from pigs per 100 hectares of cultivated area. These gross returns are highest for Denmark, Austria and Switzerland, where also the prices of pig-meat are at a similar high level. Denmark stands considerably ahead of Austria and Switzerland, as the high number of the pigs it possesses gives it a great advantage over the two other countries named. Norway will be found to rank fourth in the scale as, though the price level for pig-meat is as high as in the other three countries, it has a smaller number of pigs. The other countries take a relatively inferior place according as the number of pigs is smaller or the prices lower.

In 1931 the gross return from pig breeding is reduced in almost all the countries, in proportions more or less striking when compared with the gross returns for the previous years; for Denmark, Poland, Estonia, Finland, Latvia and Germany the rate of reduction is as high as 50 %. The return is maintained at the same level as in previous years in Lithuania and at the same level as in 1927 in Sweden and Austria. Here the question of prices is the leading factor

TABLE II. — Number of pigs per 100 ha. of the cultivated area in the principal European countries where pigs are fattened.

Country	Number of head per 100 ha.					Gross yield of pigs per 100 ha. of the cultivated area					Price of pig-meat per kg. in 1927-30
	1927	1928	1929	1930	1931	1927	1928	1929	1930	1931	

1. — COUNTRIES EXPORTING PIGS AND PIG-MEAT (INCL. BACON).

Netherlands	—	—	—	87.45	—	—	—	—	—	8,598	1.54
Denmark	126.82	114.19	122.83	156.68	176.82	23.574	20.987	30.619	20.091	14,821	2 —
Lithuania	24.22	25.43	22.63	28.95	34.68	—	2,320	2,997	2,686	2,524	1.66
Poland	25.67	—	19.31	23.73	28.61	5.150	4.904	5.386	2,751	2,122	1.24
Sweden	29.57	29.19	—	35 —	35.79	2,604	2,935	4,934	3,879	2,464	1.45
Estonia	12.63	11.64	9.95	10.35	11.51	2,411	2,500	2,710	2,053	1,326	1.41

2. — COUNTRIES IMPORTING PIGS AND PIG-MEAT (INCL. BACON).

Austria	—	—	—	45.10	—	10,323	8,281	9,533	10,302	9,055	2.23
Czechoslovakia	—	—	—	33.23	30.83	—	—	—	—	—	—
Switzerland	—	—	—	—	42.17	13,453	11,421	14,478	16,097	11,801	2.03
Finland	12.43	12.49	11.92	12.39	13.68	2,686	2,715	2,742	2,295	1,610	1.64
Norway	31.74	29.73	29 —	33.93	31.65	9,455	11,456	10,811	9,440	7,077	1.99

3. — COUNTRY IMPORTING PIG-MEAT AND BOTH IMPORTING AND EXPORTING PIGS.

Germany	79.89	68.29	67.90	79.80	81.07	—	—	5,166	3,780	2,909	1.74
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4. — COUNTRY MAINLY IMPORTING PIGS AND EXPORTING PIG-MEAT.

Latvia	14.58	14.59	10.42	14.26	19.43	2,618	2,135	2,382	2,521	1,495	1.81
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and it is not proposed to go into further details, as the subject will be treated more fully in another part of this article.

It may also be remarked that, with the sole exceptions of Austria and Switzerland, the gross return from pigs was at its highest in 1929, and further reference will be made to this point later.

Now that the influence of markets (both import and export) and also of prices on the gross returns from pig fattening has been exemplified, it is proposed to take the year 1929, the most prosperous for the pig fattener, as a point of departure for the consideration of the influence exercised by regional geographical position, farming methods and the relative size of the farm on pig breeding. Taking the total given by the gross return from stock farming and the gross return from crop growing as equivalent to 100, it will be seen what is for each region, for each system of farming and for each dimensional class of farm, the relative importance of the gross return from pig farming.

The method of farm organisation is a very important factor in the final result of pig-fattening.

In its main features this organisation is almost the same everywhere; on farms which chiefly depend on their profits from stock, live-stock products represent about 80 % of the total, except naturally on the great farms in Germany, where the percentage falls to 55 %. On farms which are mainly engaged in crop production, live-stock products are equivalent to 30-60 % only of the total.

If it is desired to go further into detail, every branch of production would require to be treated separately and the different types of farming in each of the countries here considered would have to be reviewed. In the first place the farms which in the main depend on live-stock products may be cited.

Denmark occupies a special position. It can show the highest percentages of gross returns from pig breeding, which is almost half of the total gross return for the small farms. As the area of the farm increases, the percentages for gross return from pig breeding and from the raising of other kinds of stock diminishes, though on the other hand the importance of crop production is increased. Dairy products on the other hand remain stationary.

Passing now to the Netherlands, in Overijssel it is found that the gross return from pig-farming is only half as high as in Denmark. Pig breeding comes below milk production and cattle raising. Crop production is of very little account, except in districts with sandy and peaty soils.

In Norway, there is again to be noted a reduction in the value of the gross return from pig breeding as compared with that in Denmark. The gross returns from milk production and cattle raising have the same relation to the total gross return as in the Netherlands.

In this country crops occupy a larger place than in the two others and, they appear to be most flourishing in Oestlandet.

In Sweden the geographical situation of the farm has a very marked effect on farming methods. In Upper Norrland, for example, the gross return from pig raising does not exceed 10 % of the total gross return, in Lower Norrland the percentage varies between 14 and 16 %, while in the Centre it rises to 26 %

TABLE III. — *Position in 1929-30 of pig farming as compared with the other branches of production.*

Country or region	Gross return in percentage of total					
	pig-farming	milk and dairy products	other live stock	animal production	crop production	Total
I. — FARMS MAINLY ENGAGED IN LIVE STOCK PRODUCTION.						
Denmark:—						
(less than 10 ha)	41.10	38.66	16.96	96.72	3.28	100 —
(10- 20 ha)	41.88	38.79	13.76	94.43	5.57	100 —
(20- 30 ha)	41.37	37.68	14.36	93.41	6.59	100 —
(30- 50 ha)	40.87	39.23	13.77	93.87	6.13	100 —
(50-100 ha)	38.47	37.79	12.12	88.39	11.61	100 —
(more than 100 ha)	24.51	38.34	8.49	71.34	28.66	100 —
Netherlands:—						
(Overijssel) pasturage districts . . .	20.30	50.59	25.85	96.74	3.26	100 —
(Overijssel, IJsselstreek)	20.45	32 —	39.04	91.49	8.51	100 —
(Overijssel, sandy districts)	27.10	41.20	29.17	97.47	2.53	100 —
(Overijssel), districts sandy and peaty (mixed)	26.23	32.25	29.86	88.34	11.66	100 —
Norway:—						
Oestlandet	14.39	43.20	20.21	77.80	22.20	100 —
Trøndelag	12.90	41.24	26.88	81.02	18.98	100 —
Sörlandet	13.24	39.20	30.62	83.15	16.85	100 —
Vestlandet	12.04	34.01	37.58	83.63	16.37	100 —
Sweden:—						
Upper-Norrland } (less than 10 ha).	9.69	54.07	25.93	89.69	10.31	100 —
} (10-25 ha)	10.10	58.48	20.08	88.66	11.34	100 —
Lower-Norrland } (less than 10 ha).	16.58	48.70	25.14	90.42	9.58	100 —
} (10-25 ha)	14.24	49.85	21.96	86.05	13.95	100 —
} (less than 10 ha)	19.27	38.76	30.97	89 —	11 —	100 —
} (10- 25 ha)	25.54	38.07	24.10	87.81	12.29	100 —
Centre } (25- 50 ha)	15.49	49.61	17.57	82.67	17.33	100 —
} (50-100 ha)	9.43	57.41	14.02	80.86	16.14	100 —
} (more than 100 ha)	5.56	47.06	20.59	73.21	26.97	100 —
Finland:—						
(peasant farms)	10.74	52.13	16.97	79.84	20.16	100 —
(large farms)	8.42	57.02	12.22	77.66	22.34	100 —
Estonia	19.34	38.47	17.22	75.03	24.97	100 —
Austria:—						
(alpine farms)	11.21	45.68	31.52	88.41	11.59	100 —
(dairy farms without alpland)	13.32	39.38	30.05	88.75	11.25	100 —
(dairy farms with alpland)	14.56	38.48	34.55	88.59	11.41	100 —
(mixed farms with alpland)	15.91	37.65	29.48	83.04	16.96	100 —
(mixed farms without alpland)	26.27	25.05	27.34	78.66	21.34	100 —
Switzerland:—						
(cattle raising farms)	7.81	28.94	57.44	94.19	5.81	100 —
(alpland farms)	8.81	35.94	52.09	96.84	3.16	100 —
(farms exclusively grass)	6.19	48.96	30.76	85.91	14.09	100 —
(farms growing mixed forage crops) . .	15.97	40.01	23.88	79.86	20.14	100 —
(dairy farms)	10.25	49.83	21.85	81.94	18.06	100 —
(mixed)	10.20	33.04	28.92	72.16	27.84	100 —

TABLE III (continued).

Country or region	Gross return in percentage of total						
	pig- farming	milk and dairy products	other live stock	animal produc- tion	crop produc- tion	Total	
Germany:							
Farms raising cattle:—							
North-west	27.89	19.55	45.80	93.24	6.76	100 —	
Grassland and pasture:—							
Bavaria	10.08	54.62	28.29	92.99	7.01	100 —	
West and South {	5- 20 ha.	25.71	21.33	29.57	76.61	23.39	100 —
	20-100 ha.	21.66	23.33	25.01	70 —	30 —	100 —
	more than 100 ha.	13.86	29.95	14.86	58.67	41.33	100 —
East {	5- 50 ha.	20.41	27.09	27.50	75 —	25 —	100 —
	50-200 ha.	15.21	29.13	21.74	66.08	33.92	100 —
	more than 20 ha.	13.51	19.83	20.68	54.02	45.98	100 —

2. — FARMS MAINLY ENGAGED IN CROP PRODUCTION.

Germany:—							
Farms growing cereals:—							
West and South	{ 5- 20 ha. . . .	20.56	21.76	21.90	64.40	35.60	100 —
	{ 20-100 ha. . . .	17.46	24.02	15.07	56.55	43.45	100 —
	{ more than 100 ha.	12.07	19.43	10.42	41.92	58.08	100 —
East	{ 5- 50 ha. . . .	18.88	14.47	21.69	55.04	44.96	100 —
	{ 50-200 ha. . . .	10.67	19.20	13.21	43.08	56.92	100 —
	{ more than 200 ha.	8.96	13.59	12.41	34.96	65.04	100 —
Farms growing sugar beet:—							
West and South	{ 5- 20 ha. . . .	7.10	21.48	11.45	40.03	59.97	100 —
	{ 20-100 ha. . . .	9.95	20.87	11.07	41.89	58.11	100 —
	{ more than 100 ha.	6.02	13.74	8.32	28.08	71.92	100 —
East	{ 5- 50 ha. . . .	13.73	19.86	15.58	49.17	50.83	100 —
	{ 50-200 ha. . . .	7.16	17.20	8.86	33.22	66.78	100 —
	{ more than 200 ha.	5.80	12.35	10.62	28.77	71.23	100 —
Austria: farms growing cereals		24.16	24.53	19.20	67.89	32.11	100 —
Sweden:—							
South	{ 25- 50 ha. . . .	20.28	28.11	12.61	61 —	39 —	100 —
	{ 50-100 ha. . . .	25.27	33.62	8.88	67.77	32.23	100 —
	{ more than 100 ha.	11.42	38.57	13.15	63.14	36.86	100 —
Netherlands: —							
Overijssel, marshy districts		1.70	3.15	7.68	12.53	87.47	100 —
Lithuania.		20.59	23.07	12.42	56.08	43.92	100 —
Poland:—							
South		16.26	25.23	28.86	68.35	31.65	100 —
East		20.96	23.10	19.89	63.95	36.05	100 —
Centre		20.41	20.21	20.21	60.83	39.17	100 —
West		23.13	23 —	22.12	68.25	31.75	100 —

for farms of 10-25 hectares. As already mentioned in the case of Denmark the value of the gross return from pig-raising is reduced in proportion as the area of the farm increases and crop production grows in favour.

Passing from Sweden to Finland the situation remains the same. In Finland, there is no marked difference between peasant holdings and the large farm enterprises as regards farm organisation. The area under forest occupies up to 85 % of the total area of the farm, so that the difference between the cultivated area of the large and of the peasant farms is less marked than in other countries.

Taking the Balkan and Scandinavian countries together, Sweden and Finland derive the greatest profit from milk and dairy products as such, and the gross return from dairy products is as high as 57-58 per cent of the total gross return. In Lower Norrland and Central Sweden, where the area of the farms is either less than 10 or from 10-25 hectares, this percentage falls to 38 per cent as more use is made of dairy waste products in pig-fattening. The characteristics of the farms in these districts resemble closely those of the farms in Norway and Estonia.

In Austria, a country situated in the centre of Europe, it will be observed in passing from the alpine to the dairy and mixed farms that the importance of pig fattening and crop production shows a constant increase and that of milk production a constant decrease, as regards gross returns, while that of stock raising is unchanged. This fact signifies that, in the Alps, cheese-making has a higher importance than pig fattening with dairy waste products, while on the dairy farms these waste products are of much greater value. The organisation of the farms however remains the same, whether they possess alpland pastures or not. On the mixed farms, with alplands the importance of cheese making as a mode of using milk residues is greater than on the mixed farms without alpland, where pigs are more largely in request for utilising these residues. On the alplands the pigs pass a large part of the day in the open and browse on the grass left by the cattle.

In the Alps of Switzerland, stock raising is more in favour and pig fattening and also crop growing are relatively unimportant. Farms solely used for grazing are by preference devoted to milk production as such, and the milk residues, as in the two previous farm groups, are fed mainly to young stock. On the other hand, on the farms which grow mixed fodder crops, pigs are largely used for the consumption of by-products: 16 per cent. of the total gross return is attributable to pig fattening, while for the farm groups previously mentioned, the gross return from pig fattening amounts to 6-8 per cent. of the total only. It should be added that on the farms growing mixed fodder crops, pigs are fattened for the purpose of utilising to a certain degree the by-products of cereal growing and of hoed crops; the gross return from crop growing on these farms is a fifth part of the total gross return. The same is the case for mixed and dairy farms; young cattle and pigs share the waste products of the dairies and of the crops. It has been seen that on the alpine farms solely given over to grass and on those which are mainly used for raising cattle, calves are the chief consumers of the farm by-products.

In Germany the cattle raising farms of the North West and the grass and pasture farms of Bavaria are very little concerned with crop growing. On the first named the use of milk as such and of dairy products is of very slight importance and milk is fed first to the calves and then to the pigs. In Bavaria the farmer makes his income from the sale of milk and dairy products and stock raising is twice as important as pig fattening. In the West, South and East crops have value in proportion as the size of the farm increases as in all the other countries; on the large farms with over 100 hectares in the West and on those with over 200 hectares in the East, the gross return from stock raising is only half the total. The importance of pig fattening diminishes with the size of the farm and this is also true for stock raising, while crop production increases quite independently of stock breeding.

To sum up, it may be said that:—

(a) The production of milk and dairy products forms the basic factor on which the peasant farms in a great number of the European countries depend; the waste products of the dairy are fed sometimes chiefly to calves, sometimes to pigs, sometimes again both to pigs and to calves; for the rest the peasant farmer endeavours to make his main profit by the sale of milk and dairy products;

(b) As the size of the farm increases, the value of live-stock products is diminished in favour of crop production and farming becomes a more complex affair;

(c) In almost all the countries here considered, viz., the Netherlands, (Overijssel), Norway, Sweden, Finland, Estonia, Austria, Switzerland and Germany, the organisation of the farms, which are chiefly occupied in stock raising is generally similar. Denmark however stands in a class apart, as in this country the farmer makes his living out of milk and pigs almost exclusively.

The second group contains farms in which crop growing is the main interest. Here have also been included certain groups of farms in the South of Sweden, in Lithuania and Poland, where crops are an important but not the dominant factor in the gross returns. This has been done in order to differentiate the farms in Sweden and Austria, which grow cereals and sugar beet, from those which depend almost exclusively on profits on live stock. The farms in Lithuania and Poland are also used on a large scale for growing wheat and hoed crops and they also rightly figure here.

The farms in Germany which grow cereal crops obtain a gross return from pigs, expressed as a percentage of the total, less than that of the farms which are chiefly occupied with livestock production. Again, in proportion to the total gross return, the return from pig-fattening is of less account in the farms in Germany which grow sugar beet; where live stock is the chief interest, the reduction in the percentage for milk production is less marked, in fact it is very little changed. Sugar beet waste is fed to sheep in Germany, where the total head is comparatively high, in those regions where sugar beet is grown.

In Austria and in Sweden stock raising is of less importance for the farms which grow cereal or sugar beet crops than for those which are more particularly concerned with live stock products. A corresponding reduction in the percent-

ages for milk production is to be noted when the gross return percentage from pig fattening is relatively high.

In Overijssel, on farms which are mainly occupied with live stock products, 90-97 per cent. of the gross return is derived from animal husbandry; farms which grow cereal and hoed crops on the other hand obtain 87 per cent. of their gross return from this source and pig-breeding is in practice an inconsiderable item. In Lithuania and in Poland farm management is similarly organised. A third of the gross return is provided by the crops, a fifth by pig fattening, a second fifth by dairy farming and almost another fifth by stock breeding.

It may be stated that in Europe the methods used for turning to account the resources of the soil are almost identical for all countries; according to the region and its prevailing natural conditions, the peasant inclines either to stock or to crop farming though not to single product farming. There are certain regions and countries where crops for industrial uses (e. g., the fen lands of Overijssel), milk production and pig fattening (e. g., Denmark) occupy practically the sole attention of the farmer, but there again live stock or certain crops used for the requirements of the farm are also to be found. Speaking in general terms, the European farm is complex in character. It possesses large stock giving regular returns and stock for breeding, pigs, poultry, etc., a system of crop rotation, supplying products used by the animals which serve the purposes of the farm or are sent to market. It is, in fact, the offspring of the patriarchal agriculture of former days. It is quite true that the peasant no longer endeavours, as in the past, to provide mainly from the land which he possesses for all the requirements of his family; agriculture has been industrialised more or less rapidly according to the particular country, but it has not changed its original character. It has employed the means which modern science has put at its service in order to increase yields and certain yields in preference to others, but it has always sought to obtain from every kind of resource it possesses the highest total return. Even though it may be impossible, economically speaking, to draw a clear distinction between the results given by the various branches of a farm undertaking, it is in any case possible to see how far, for example, in given conditions of production, pig fattening is successful, and highly important confirmation can be obtained by following the success or otherwise of pig farming over a certain sequence of years. An endeavour is being made to obtain information on the subject of pig-fattening in the United States in those regions where maize is cultivated solely as a feed for pigs, and it will then be possible to see whether, in regard to pig fattening, the results obtained in America are better than those for Europe and, at the same time, whether a completely industrialised form of agriculture is more profitable than another.

It is therefore intended to take up, within the sphere of farm economy which properly pertains to the Institute, a thorough study of the conditions in which pig fattening is carried out in all those countries which supply information on the economic results of pig fattening, adequate for the purpose in view.

AGRICULTURAL POLICY AND THE CRISIS IN POLAND

Part 2 ()*

§ 3. — POLICY FOR COMBATTING THE CRISIS IN POLAND.

The problem of the agricultural crisis in Poland may be regarded as that of raising prices of agricultural products or rather as the problem of adjustment of costs of agricultural production to the level of agricultural prices. In Polish policy the price decline, resulting from the situation of the world agricultural market, has been adopted as a basis of operations. In other words the price decline is accepted as an irrevocable fact, at least for a period of considerable duration. Very naturally therefore the principal instrument for combatting the agricultural crisis has had to assume the form of adjustment of prices of manufactured goods, of indebtedness, of fiscal charges, of wages and other factors in the costs of agricultural production, to a price level of agricultural products comparable to that of the world market. The object of the national policy has, in fact, been an adjustment of the price level on the internal market of Poland to the conditions brought about by the present crisis, while however modifying certain effects of the fall in prices, especially in the sphere of finance. A policy of deflation has been adopted and the object of endeavour since 1930 has been to find a way of ensuring adjustment of prices to the world level without affecting internal capitalisation, which is regarded as the basic element in all lasting economic reconstruction of the country. Since the very rapid fall of agricultural prices has been accompanied by a much more gradual fall in prices of raw materials and manufactured goods, the object of the national policy has been to reconcile these two levels, and to adjust the other factors of production costs, such as fiscal charges, railway rates and workers' wages. Apart indeed from such adjustment of price levels no lasting equilibrium would have been attainable, and the economic expansion of the country in respect of exports would have been attended by immense difficulties. None the less it will be readily intelligible that a policy directed towards such adjustment, while at the same time firmly resolved on losing nothing of the results of internal capitalisation, must inevitably encounter serious difficulties and opposition. The way chosen however seemed to be the only one likely to leave the country, after accomplishment, in a position of economic equilibrium and permanent well-being.

Three methods have been followed by Polish policy with the object of attaining the desired result: that of maintaining a level of agricultural prices, such as, in the given conditions, appeared to be the minimum necessary for

preserving the country from a general failure of farms; that of adjusting costs of agricultural production to the level of the prices of agricultural products, and that of remedying the financial situation in which the farmers had found themselves at the beginning of the crisis, as the consequence of the process of intensification of production, their short term indebtedness and the very rapid fall of agricultural prices.

A. Measures Taken in regard to Agricultural Prices.

As the object of the Polish policy was to adjust the equilibrium of the national economy to the level of the world agricultural prices, the problem presented itself of modifying as far as possible the results of a not too far reaching deflation. A general statement has already been given of the causes which decided Polish economic policy to choose the method of thorough going deflation, and any further explanation would seem to be superfluous.

If, however, the adjustment of the price level on the internal Polish market to the level of world prices remained the final object desired, the internal economic conditions required a modification of the effects of a too rapid adjustment, especially so as to avoid endangering the financial structure of the country. Since the general farm indebtedness had frozen a large proportion of the financial resources of the country, it was important not to bring about, by a too rapid process of deflation, the liquidation of farm indebtedness by the method of sales by auction and bankruptcy which would have become universal during the transition period, before the costs of agricultural production had become adjusted to the level of the prices of agricultural products. While lowering the level of production costs, it was essential to maintain a reasonable level of agricultural prices so as to be able subsequently to direct the whole equilibrium towards a lower level.

The methods selected for preventing the agricultural price level from falling below the level regarded as a minimum were those of export premiums and of an intervention on the internal market. The function of the former was to check the fall of internal prices to the level of world prices, a level which had been very seriously affected by the international dumping. If the average cereal prices c.i.f. Hamburg are compared with the Warsaw quotations (Table VI), it will be seen that the Warsaw prices are slightly higher than the Hamburg, and that the premium had covered with an excess the difference in the transport costs from the internal market to the consumer in the country of destination. The export premiums have varied in value from one period to another, also they have been assigned to a variable number of agricultural products from one season to another in accordance with the situation of the internal market. For the whole period under review here the premiums were granted for rye and for bacon, while for wheat, barley, oats and other products they have been granted only from time to time, when it has been calculated that the production has exceeded the internal demand, and when, as a result, the internal prices

showed a tendency to be affected by those ruling for export. When the national production of one or another cereal did not exceed the internal consumption, a prohibition or at least a regulation of imports ensured the maintenance of the required level of prices. The export premium varied in value from 4 to 6 zloty per quintal in the course of the period under review.

The purpose of the interventions on the internal market had not been to raise prices, this being too costly a method, but to eliminate the seasonal price movements. Owing to the serious financial position of the majority of farms the sale of products immediately after the harvest was excessive with the result that the seasonal variations of autumn and spring prices were very marked. In order to stabilise prices throughout the year an organisation was set up with the title of "State Establishments of Agricultural Industry and Crop Products" to which was assigned the capital required for intervention. This organisation was expected to adjust the demand to the seasonal variations in supply and thus to stabilise prices. The surplus of purchases are exported at current prices. An agreement between private exporters and the Establishments in respect of prices however removed the influence which this organisation might have exercised on the level of export prices. Permanent organisations were also expected to bring the quantities exported by the Establishments into relation with contemporary conditions of the export market. Without having accumulated any considerable stocks of cereals the Establishments had been able to effect some modification of the seasonal variations in the prices of cereals on the internal market, which had decidedly influenced the financial situation of the farms.

On the other hand, in order to avoid an abnormal supply in the autumn months which would have necessitated disproportionate interventions, credits guaranteed by the cereal stocks of the farms were arranged. These credits, granted at the lowest possible rate of interest under Polish conditions, ensured financial resources to the farms without the necessity of any excessive sale of agricultural products immediately after the harvest. The amount of these loans varied from year to year as also the terms under which they were granted. The sum that could be borrowed corresponded to 60 to 70 per cent. of the value of the cereals on which the credit had been secured, and the rate of interest was 6 per cent. per annum. The credits were payable in instalments in the course of the months from January to June. In this way the intervention of the Establishments was greatly facilitated, and the credits and the organisation should be considered as fulfilling a similar purpose.

B. Lowering of Production Costs.

As already noted in the course of examination of the conditions of the agricultural crisis in Poland, the decline of agricultural prices had been much more rapid than that of manufactured goods, wages of farm workers and other factors in the costs of agricultural production. A far reaching consideration

has been given by the national policy to the adjustment of these various factors to the level of agricultural prices. The problem has been the subject of discussions in the economic press during the last three years, and, more essentially, the objective of several measures taken by the Government. The problem itself, which touches nearly all the branches of the economic activity of Poland—the adjustment of one factor necessitating the adjustment of a whole series of others—had been undoubtedly one of the most difficult of solution. Apart from the wages of farm workers, a problem which was of importance only in the case of farm holdings of over 20 hectares, and apart from the prices of manufactured goods, the costs of agricultural production consist largely not only in interest on debts but also in fiscal charges and those imposed by social legislation. The process of adjustment necessitated therefore the adjustment of all these different factors in the production costs of farming and involved certain difficulties which could not be overcome except by lapse of the necessary time. The objective of this adjustment has thus been pursued stage by stage by the Polish policy. In the light of our present knowledge it is possible to estimate the results obtained, results which are in no way final, but which, according to official statements, represent a halfway stage and which, it is intended, shall go further. The reduction of State charges and the modification of the fiscal system in respect of agriculture will receive the first mention in connection with the consideration of the measures taken for setting in order the finances of the Polish village. There will follow the discussion of the lowering of the prices of commodities produced under cartel conditions, and the lowering of the prices of artificial fertilisers of Polish origin, and finally the reduction in the wages of farm workers, whether regular or seasonal.

All these factors have followed more gradually the fall of agricultural prices. This is fully intelligible, not merely because the agricultural crisis has been more acute than the crisis in the other branches of economic activity, but also because the economic structure of agriculture is less complex. A large proportion of the costs of agricultural production necessarily present very great difficulties in rapid adjustment to a lower level. Their adjustment was the more difficult in that the rapidity of the fall of agricultural prices did away with the adjustment results obtained. The more rapid was the fall in agricultural prices, the greater became the relative difference between the level of these prices and that of production costs. The two items however tended towards a common level, although at a differing rate of speed. The stabilisation of prices of agricultural products in the course of 1933, a stabilisation which one is justified in regarding as definitive, had this result, *viz.*, that afterwards every decline in the level of the factors constituting the costs of agricultural production becomes also a diminution in the ratio between agricultural costs and prices. Table VII shows this very clearly. From 1929 to 1932 the yearly price decline of products sold by the farmers averaged 12.8 per cent. of the 1928 level, while the price fall of commodities purchased by farmers averaged 4.6 per cent. only. In 1933 the price fall in products sold amounted to 6.3 per cent. of the same level, while that of commodities purchased was 8.5 per cent.

(C) *Improvement of the Financial Situation of the Farms.*

As has already been emphasised in the first part of this article, the farms in Poland were heavily indebted in the course of the years 1927 to 1929. This indebtedness had been covered partially only by long term credits, while the large proportion of the indebtedness was in the form of short term credits. The rapid fall of agricultural prices had further increased the real value of the indebtedness of the farms expressed in terms of agricultural products, so that the burden of debts became heavier, not merely owing to the decline in profits and the difficulties of meeting the short term credits from normal resources, as had been done in earlier years, but also because the real value of the indebtedness had increased. A policy which considered as indispensable the maintenance of a price level of 40 to 50 per cent. lower than that which existed in the period in which the farms had contracted the indebtedness, was naturally compelled to contemplate the results of the deflation in the sphere of the solvency of the farms.

For the end of the year 1932 the Ministry of Finance had established a statement of the indebtedness of farms in Poland; this is given below and will later be examined more closely;

TABLE IX. — *Indebtedness of Farms in Poland on 31 December 1932.*

	Millions of zloty
1. Long term credits	2,543
2. Short term credits	1,724
3. Taxes and other charges	354
Total indebtedness	4,621

According to estimates made, this indebtedness in 1933—if normal conditions of payments had prevailed—would have involved interest amounting to about 457,200,000 and amortisation of capital amounting to 249,700,000, or a total of 706,900,000 zloty (1).

A more exact explanation of these figures seems required. Firstly, out of the total amount of the long term credits, about 700,000,000 zloty represented private mortgage loans for relatively short periods. Also the rate of interest on

(1) See: Michel WIERUS-KOWALSKI, in the "Rolnik Ekonomista" the organ of the Union of Agricultural Chambers and Organisations of the Polish Republic.

this portion of the long term indebtedness had been relatively high, averaging 12 per cent. per annum. The remainder of the long term indebtedness was divided between the agricultural long term credit institutions and the funds administered by the State Agricultural Bank, and this remainder was charged with a rate of interest of 7 to 8 per cent. on an average and with a rate of amortisation of 2 per cent. yearly. The short term credits were divided equally between credits granted by banking institutions and credits granted by different branches of economic activity, under the form of commercial credits. The periods for which these credits had been granted varied from three months to two years.

In such conditions when the value of Polish agricultural production amounted to 4,300,000,000 zloty, the solvency of the farms became a problem of the greatest importance. The long term credit granted to agriculture was estimated at more than 60 per cent. of the issues on the internal market, while the short term credit granted by the banks amounted to a little more than 55 per cent. of the total activity of the banks in the sphere of short term credit. In the conditions of the Polish money market, when the results of internal capitalisation had been once destroyed by the war and once again by the inflation of 1921 to 1924, the insolvency of the farms threatened to destroy for a third time what had been gained during more than seven years of economy.

At the beginning of 1932 the Polish Government decided to inaugurate an institution, the object of which was to organise a policy in view of the financial recovery of the farms. It was set up in the first place as an arbitration court and had been granted certain prerogatives as the case arose. In its present form it includes a central bureau, offices in all the administrative areas and all the sub-prefectures, the competence of the hierarchical grades being well defined. This organisation was set up at the time of the first series of laws on agricultural finances, especially the laws on the agreements between farms and creditors, on the parcelling of the land of indebted farms, on the segregation of mortgages and on the lightening of fiscal burdens in respect of farms with arrears payable to the Treasury and to various social compulsory institutions. The series of laws, which have just been enumerated by the purpose served in each case, came into force in the course of the period January to April 1932, and it is to that period that should be referred the first efforts of the Polish policy in view of the financial conditions of the village.

The first series of laws related to the problem of the insolvency of farms. More precisely, the object of all these laws was to protect farms against the pressing demands of creditors which might have led in the given circumstances to a liquidation of a large proportion of the farms, the current liabilities of which did not exceed even 30 to 40 per cent. of the assets. In the prevailing conditions, when the credit restrictions, both on the side of the banks and on that of private creditors, were becoming increasingly marked, the farms were faced with the impossibility of any extension of short term debts which had fallen due, and, in view of the absence of floating capital and the heavy fall in profits, with the impossibility of meeting their obligations. Under the existing legal system, the creditors were empowered to demand a compulsory liquidation, which, with the general economic conditions prevailing, would satisfy, in the

majority of cases, the demands only of a section of the creditors. The law prescribed in fact that the assets of the farm realised at the time of a forced liquidation must be used to meet in turn the claims of the State, farm workers' wages, mortgage debts and finally the short term debts, current accounts at the banks and indebtedness to private individuals. In the majority of cases the capital obtained on forced liquidation was sufficient only to meet the claims of creditors with prior right to levy distress and not to pay off short term debts. Also, owing to the absence of floating capital on the money market, the cases became frequent in which the agricultural long term credit institutions remained the owners of the farm, in default of purchasers, and thereby found themselves threatened with insolvency as directly engaged in agricultural production. A special law which came into force in March 1932 prohibited forced liquidation of a farm in the case when such liquidation did not ensure the realisation of at least twothirds of its estimated value. This law put an end to a situation in which the compulsory liquidation of a farm, with debts not exceeding 30 to 40 per cent. of the assets, did not cover more than a limited proportion of the debts. A further law, enacted at the same time, introduced an individual moratorium for farms the indebtedness of which amounted to from 40 to 75 per cent. of the estimated value. In this case, the owner had the right to claim judicial supervision. The court appointed a trustee who assumed the management of the farm, and met, as far as possible, the creditors' claims on the property. The court was also empowered to fix the period of the individual moratorium, which depended on the development of the financial situation of the farm which had obtained the right to a moratorium. By a special law it became possible to improve this situation by means of the parcelling out of a part of the farm holding, and with the capital so obtained to meet a proportion of the indebtedness. Special credits for this purpose were opened by the Agricultural State Bank which administered the Treasury Funds intended for the economic reconstruction of agriculture.

Thus during the first phase of its activity the Polish policy had prohibited by a series of laws the forced liquidation of farms in the cases in which they were not in a position to realise a fair proportion of the assets of the property, and had moreover introduced a system of individual moratoria. The extreme elasticity of this system made it possible to treat each case differently according to the conditions of any particular farm. While protecting the farms against undue pressure from the creditors, the laws enacted ensured to these latter the payment of their claims, which was in no way ensured by the existing legal system, especially in the case of creditors without prior right to levy distress. In this way the first phase of the endeavours to surmount the financial difficulties of the village ensured also to the creditors of the farms the full payment of their claims.

The lightening of the fiscal charges should next be considered. Apart from the exemptions granted to farms in respect of taxation arrears, the measures taken prohibited in a series of cases the recovery of taxes by compulsory methods. Special exemptions were allowed in respect of cereals intended for sowing, of cereals not yet reaped, and of the indispensable farm requisites such as horses,

cows, implements, etc. Also these exemptions facilitated the payment of the arrears due by diminishing the sum payable, if paid within the prescribed periods.

The first stage of the plans for improvement of the financial situation of the farms had so to speak exhausted the negative aspect of the problem. A measure of financial relief was thereby ensured to the farms by permitting delay in the payment of debts; the conditions for carrying on the normal farm activities were ensured to farms indebted up to 75 per cent. of their estimated value; and to the non-privileged creditor the payment of their claims in full was assured. The results of the enactment of the laws dating from the first half of 1932—laws relating to debts originally incurred before 15 October 1931—had rendered easier the conditions of agricultural production, but at the same time by their action a part of the capital invested in agricultural production in the course of the years of prosperity had become frozen. The creditors had been assured of the payment of the debts due to them, but the period within which the payment should have taken place, while delayed, had not been in any way defined, and in consequence certain difficulties on the market of short term capital had arisen. On the other hand, the financial conditions of the farms were shown to be of a homogeneous character in respect of certain problems, a fact which suggested the possibility of resolving them on general lines, in place of the individual moratoria which had been introduced. The question of amortisation of long term credits was one of particular importance. The farms in the conditions of 1932 were, with certain exception, faced with the practical impossibility of making in addition to interest payments, also relatively high, payments on account of the capital of the long term debt as well as the payment of the short term debt. Fresh tasks were imposed upon the Polish policy and these form the second stage of the endeavours undertaken.

With a view to the release of the short term credits frozen on the farms, a banking institution was set up, with the function of converting these debts into long term liabilities. The necessary capital was supplied by the State banks, and the bank began operations in the course of 1933. The categories of debts which could be converted were defined in accordance with the nature of the indebtedness and with the financial position of the farm which had been accorded the opportunity of such a conversion. At the same time, in the course of 1933, a general moratorium had been introduced relating to the payment of the capital of the mortgage debts of farms and this moratorium was rendered more effective by the conversion of short term indebtedness. In particular the maximum rate of interest was limited to 6 per cent., while the rate paid for the long term credits granted by the mortgage credit institutions and by the State Agricultural Bank was reduced to 4 to 5 per cent.

Within the scheme for a general moratorium and for the conversion of the short term debts into long term liabilities, the individual moratorium was maintained as a form of temporary assistance.

In present conditions it may be assumed that the general character of the steps taken to bring about financial relief for Polish agriculture will not be greatly modified. The conversion of short term into long term credits will finally bring

to an end the dangerous situation created by the indebtedness of Polish agriculture. The measures taken to enable the farmers to meet liabilities contracted during the period of relative prosperity, particularly the moratoria granted to individuals and the protection of the farms against compulsory and inequitable liquidation, have reintroduced normal conditions of farm work. It remains only to await the final adjustment of the costs of agricultural production to the prices of farm products, in order to consider the problem of the crisis in Polish agriculture, in so far as it relates to internal conditions, as resolved. There remains the question of the possibility of finding foreign markets for the surplus products; this problem which wholly transcends the limits of the possibilities of the national policy is quite naturally linked up closely with the world crisis and with the development not merely of the economic situation, considered as a phenomenon of conjuncture, but also in its aspect as a problem of reconstruction.

André JALOWIECKI.

INSURANCE AGAINST LIVE STOCK LOSSES IN FRANCE

In 1933 the following Insurance Societies in France were engaged in Live Stock Insurance operations:—

“L'Avenir”, Société d'assurance mutuelle, founded in Paris in 1875.

“Société Générale d'Assurances Normandes”, a mutual insurance company, established in 1908 at Rouen.

“La Bienfaitrice Agricole”, Société d'assurances mutuelles, established in 1920 at Paris.

“Le Bon Laboureur”, Société d'assurances mutuelles, established in 1855 at Dreux (Eure-et-Loire).

“Cultivateurs Réunis”, a mutual insurance company established in 1897 at Nantes.

“Fédération des Agriculteurs Français”, a mutual insurance company established in 1905 at Paris.

“Fédération Nationale Agricole Commerciale et Industrielle”, a joint stock insurance Company, founded in 1908 at Paris.

“La Libérale de France”, a mutual insurance company established in 1914 at Montceau-les-Mines.

“La Mutuelle Régionale Agricole de Chartres”, a mutual insurance Company established in 1873 at Chartres under the title of: “La Garantie Mutuelle d'Illiers”.

“La Maternelle”, a mutual insurance company established in 1854 at Dreux.

“La Mutuelle Percheronne”, a mutual insurance company established in 1898 at Nogent-le-Rotrou.

“La Nationale”, a limited liability insurance and re-insurance company established in 1920 at Paris.

"La Prévoyante", a mutual insurance company established in 1894 at Souppè.

"La Providence", a limited liability insurance company established in 1881 at Paris.

"Union Fédérale de France", a mutual insurance company established in 1898 at Paris.

"Almelo", a limited liability insurance and re-insurance company established in 1923 at Paris.

"L'Union Protectrice", a mutual insurance company established in 1909 at Paris.

"L'Assurance Hippique Française", a limited liability insurance and re-insurance company established in 1920 at Paris.

"Société Alsacienne et Lorraine d'Assurance Mutuelle contre la mortalité des Chevaux", established in 1919 at Strasburg.

"La Mutuelle de Poitou", a mutual insurance company established in 1908 at Poitiers.

"La Réparation", a mutual insurance company established in 1912 at Bordeaux.

"Mutuelles de Turf, des Éleveurs et Agriculteurs Français", a mutual insurance company established in 1921 at Maisons-Lafitte.

"Le Rhône", a mutual insurance company established in 1918 at Lyons.

"L'Urbaine et La Seine", a limited liability insurance company established in 1880 at Paris (1).

In addition to the companies named in the above list, there is also a large number of small mutual agricultural insurance societies, commonly known as *mélinettes*, which deal with live stock insurance. On 31 December 1928 there were 6,470 societies of this type (2).

Among the joint stock and mutual insurance companies enumerated, the first to undertake live stock insurance business in France was *La Société d'Assurance Réciproques*, which was founded in 1803 and dissolved in 1838. Next followed *La Société des Cultivateurs* in 1838, *La Caisse Générale des Assurances agricoles* in 1856 and *L'Etable Charentaise* in 1858. These three companies shared the same fate as the first mentioned.

According to a table published in the *Argus* in 1906, there were in France 12 insurance companies, which dealt with this class of business, with a total issue of some 50,000 policies and a total value of the insured stock amounting to 85 million francs. The oldest established of these Companies were *L'Union*

(1) *L'Argus*, an international insurance publication, of 5 August 1934 - *Annuaire des sociétés d'assurance opérant en France*, 1934, offices of *La Semaine*.

(2) Ministry of Agriculture: Report to the President of the French Republic on the work of Agricultural Mutual Insurance Companies in 1928 - *Annales de la Mutualité et de la Coopération agricole* January 1932, p. 33.

Beauceronne at Pithiviers and *La Maternelle* at Dreux both founded in 1854, while the two most important were *L'Avenir* and *La Mutuelle d'Illiers* (1).

Both the limited liability insurance companies and the mutual societies are governed as regards their constitution and operations by the highly important official regulation of 8 March 1928, which abrogated and took the place of the regulation of 22 January 1868, adopted when bringing into effect article 66 of the Law on Companies of 24 July 1867 (2). The Decree of 1922, which, together with the regulation of 1868, constitutes the common charter of the insurance companies, contains certain provisions in the articles of association, which are common to the limited liability and also to the mutual companies, together with the special rules applicable to the respective types of company.

The Decree of 8 March 1922 not only prescribed rules to be followed as regards the actual constitution of the companies, but also made the regularity of such constitution dependent on the due observance of certain prescriptions, having special reference to their relations with third parties. Most of these prescriptions were repeated and reaffirmed in the highly important Law of 13 July on the Insurance Contract.

The limited liability and the mutual insurance companies are both alike required to include in their articles of association and in the general conditions of the policies they issue a certain number of provisions which are regarded in the Decree of 8 March 1922 and in the Law of 13 July 1930 as fundamental.

The Decree of 8 March 1922 *inter alia* lays down similar conditions for both classes of company in connection with their responsibilities in the matter of the inventory and balance sheets, which must be provided each year for the Ministry of Labour under the heading of "*commissions excomptées*", and also of the initial expenditure incurred for establishment and equipment charges, of the constitution of a reserve fund and of the investment of their funds.

As regards special provisions for each type of company, limited liability companies as well as the limited partnership share companies (unlimited liability companies or limited partnership companies as also private individuals are not allowed to transact insurance business) are subject to the terms of the Law of 24 July 1867 and of the later laws, whereby it was modified and supplemented.

Apart however from the general legislative provisions relating to limited liability companies, there are also special provisions having reference to companies which deal with insurance business, which are contained in the Decree of 8 March 1922. For example, limited liability companies are required to have a capital of not less than a million francs; at the same time such companies are bound to deduct each year at least 20 per cent. from their net profits to build

(1) EHRICH: *Viehversicherung in Frankreich: Zeitschrift für die gesamte Versicherungswissenschaft*, 1909, p. 587.

(2) SUMMEN: *Traité théorique et pratique des assurances terrestres et de la réassurance*, Paris, 1931, p. 87 et seq.

up a reserve fund. The decree however makes such deduction optional when the reserve fund amounts to a fifth of the capital, and so on.

The mutual insurance companies are also subject to special regulations relating to their constitution, their objects, administration, the assumption of engagements, their officers, the rules as regards the declaration, assessment and payment of claims, reinsurance and the publication of their proceedings. The Law of 8 March 1922 prescribed that their articles of association should lay down the maximum annual contribution for which each member is liable, to meet the payment of claims. These articles may require each member to pay in advance some part of the annual contribution. The amount of this payment, of which the maximum is fixed by the articles, shall be determined each year by the General Meeting. Under the terms of the law, the articles also prescribe the maximum amount of the annual contribution which may be required from each member for expenses of management. Hence the case may arise where the claims transcend the maximum laid down. The decree of 1922 therefore allows the company an option, as distinct from an obligation, to establish a supplementary reserve fund from the excess assets, so as to make good the insufficiency of the annual contributions to meet losses. Any deductions made for this purpose shall not exceed 50 per cent. of this fund in any one financial year. If, however, in spite of these precautions, at the time when the accounts of the financial year are settled, the maximum amount of the subscriptions and the 50 per cent. of the supplementary reserve fund prove insufficient, the 1922 law prescribes that the indemnity payable to each person entitled to receive it shall be reduced by proportional hundredths.

. A law dated 15 February 1917 contains important provisions regarding the control of reinsurance operations subscribed or effected in France or Algeria.

The mutual agricultural insurance societies are governed; (a) by the Law of 4 July 1900, whereby these institutions are exempted from the conditions prescribed by the Law of 24 July 1867 for companies and by the Decrees of 22 January 1868 and of 8 March 1922 on insurance societies; (b) by the Law of 21 March 1884 on Vocational Unions and by the Law of 12 March 1920, except in so far as any provisions of this law are incompatible with the working conditions a mutual insurance society; (c) by the Decree of 2 August 1923, as amended by the Decrees of 26 January 1930 and of 8 September 1933, having reference to the constitution and working of mutual agricultural insurance societies which make appeal for State subventions (1); (d) by the Law of 13 July 1930 referring to the contract of insurance so far as its provisions are not incompatible with the special rules affecting these societies (2).

The bodies may be local insurance societies in the usual sense or reinsurance societies of the first or second degree. A separate institution should be established for each class of risk. In the same commune one local society only for each

(1) Files of the Mutualiste agricole. Paris, October 1933, pp. 319 and 619 et sqq.

(2) SUMIEN: op. cit., p. 131.

class of risk is allowed to benefit from the State subventions. Where there are two mutual institutions in the same place, the one of which the articles of association were first lodged at the Mairie is given the preference, provided that its operations are properly conducted in accordance with the terms of the legislation in force.

The 1923 and the other amending decrees specify the institutions with which the surplus funds of the insurance and reinsurance societies should be invested and also the nature of the securities for the investment of their reserves. These decrees also define the terms and limits within which these societies may grant loans and underwrite the share capital of agricultural co-operative societies and of societies of general agricultural interest.

The Decree of 26 January 1930 prescribes the minimum limit of the annual contributions to be laid down in the society's articles:—

(a) for societies undertaking to make good at least 75 per cent. of the gross loss: 1.50 per cent. of the value of the stock in the case of societies which insure cattle only; 2 per cent. for societies insuring horses only; 1.75 per cent. for societies insuring both cattle and horses;

(b) for societies granting indemnities at a rate of less than 75 per cent. of the gross loss: 1 per cent., 1.50 per cent. and 1.25 per cent. respectively, following the above classification;

(c) societies insuring pigs pay at the rate of 4 per cent.

The indemnities payable are fixed by the articles but may not be at a rate of over 80 or less than 50 per cent. of the net loss. By net loss is understood the value of the animal lost as fixed by an expert valuer, after deducting the value of any part of the meat and carcase that can be utilised. The indemnity may also be reckoned on the value of the gross loss: in this case the meat and carcase remain the property of the society, which will dispose of them to best advantage in the common interest.

The live stock reinsurance societies can cover only such local societies as are constituted and operating in accordance with the provisions of the Decree of 1923 and of the later amending decrees; otherwise they will be ineligible for the State subventions.

The articles of association of the reinsurance societies must *inter alia* define the boundaries of the area in which they may carry out their operations and the conditions in which they participate in the losses of the affiliated local societies.

The reinsurance societies may either contribute towards all the losses sustained by the affiliated societies at a rate corresponding to the share paid by each society on the basis of the rate of contribution covered or else reserve their payments for the societies which have had to pay claims for a sum which exceeds a certain fixed rate. In the latter event, the articles of the reinsurance society must make provision for an adequate increase in the contributions paid to the local societies or for the raising of the point at which recourse may be had to reinsurance, or for an increase in the premium rate, whenever the local society has in three successive years had recourse to the reinsurance service.

The contributions of the local societies shall be not less than 5 per cent. of the annual insurance premiums. The articles of association of the reinsurance society

shall also fix the minimum period of affiliation for local societies at not less than 5 years.

Local mutual insurance societies may obtain State subventions, provided that they conform to the provisions of the Law of 4 July 1900 and of the Decree of 2 August 1923.

These subventions are of two kinds: (a) initial establishment subventions, allowed to societies which are in process of formation, in order to enable them to meet their expenditure on organisation and to establish their first reserve fund; (b) subventions to meet losses, granted to societies in active working, which have suffered abnormal losses during previous financial years; these subventions are allowed for the purpose of reconstituting their reserve funds.

The amount of the initial establishment grants is determined in relation to the size of the membership and the value of the stock insured. Application must be made within two years after the constitution of the Society and cannot be repeated.

The grants to meet losses are determined after taking into account the number of members, the value of the insured stock, the extent of the losses incurred, the position of the reserve fund, the rate of contributions and a grading mark given to each society in consideration of the relatively satisfactory character of its methods of working and administration.

The amount of the two kinds of subvention is fixed each year in accordance with the statement of accounts for the previous financial year and with scales fixed by the Minister of Agriculture, after consultation with the allocation Commission instituted by the Decree of 16 March 1920.

After the receipt of State subventions, these societies are subject to the inspection of such institutions, as are indicated in the Decree of 19 July 1919. They are also brought under the supervision of the general Inspectorate of the Finance Department.

The mutual reinsurance societies, if working in accordance with the terms of the law of 1900 and of 1923, may also obtain State subventions: (a) the "initial establishment" grant for the same purposes as in the case of the societies mentioned above (b) a "full activity" grant, intended to facilitate a reestablishment or increase in the reserve fund.

The "full activity" subventions are determined on the basis of scales which take into account the number of the local societies reinsured, the value of the stock reinsured, the extent of the share of reinsurance in the losses sustained by the local societies, the rate of the contributions paid by the insured parties, the reserve fund and the grading of each society in respect of the relatively satisfactory character of its working and administration. The Law of 1923 provides that no subvention is payable when the number of members and of the affiliated societies, the value of the stock insured or the number of the annual contributions are less than the minima prescribed by the relevant scales. In addition no subvention is payable to reinsurance societies which are not themselves reinsured in the second degree.

Mutual agricultural reinsurance societies of the second degree are governed by the general legislative provisions which have already been indicated as well

TABLE I. — *Live stock Insurance Companies: Statistics of Business Transacted in 1933.*

Name of the Company	Date of foundation	Head office	Number of persons insured	Value of stock insured	Assets	Claims	
						Number	Total amount paid
Avenir	1874	Paris	7,510	86,100,000	4,475,619	1,357	3,704,732
Assurances Normandes	1908	Rouen	1,255	14,969,600	681,978	605	365,119
Bienfaitrice Agricole	1910	Paris	3,012	1,188,650	863,084	294	288,960
Bon Laboureur	1855	Drèux	3,908	40,342,095	2,384,627	620	1,895,856
Cultivateurs Réunis	1897	Nantes	1,167	2,586,496	105,618	54	60,123
Fédération des Agriculteurs Français	1905	Paris	14,187	95,605,497	4,071,527	937	2,315,594
Fédération Nationale	1908	Paris	..	25,204,012	1,226,144	450	870,527
Ibérale de France	1914	Montceau-les-Mines	170	1,162,564	9,735	13	31,952
Mutuelle Régionale Agricole (2)	1873	Chartres	12,156	124,755,430	5,181,204	1,590	4,782,317
Maternelle	1854	Drèux	..	—	186,537	55	147,530
Mutuelle Percheronne	1898	Nogent-le-Rotrou	14,520	115,553,680	3,078,602	1,798	3,145,131
Nationale	1920	Paris	4,506	29,988,147	1,521,221	368	1,151,371
Prévoyante	1894	Souppes	1,490	13,603,050	646,347	154	508,575
Providence	1881	Paris	8,030	52,751,484	2,113,783	908	2,065,560
Union Fédérale de France	1804	Paris	11,479	81,103,770	3,328,963	1,207	2,674,333
Almelo	1892	Paris	5,000	41,000,000	1,753,988	538	992,918
Union Protectrice	1909	Paris	1,300	10,000,000	658,233	140	294,120
Assurance Hippique Française	1920	Paris	26,715	190,988,447	8,992,327	1,275	5,665,178
Société Alsacienne et Lorraine	1919	Paris	7,000	37,000,000	3,546,896	846	2,386,961
Mutuelle du Poitou	1908	Strasbourg	172	798,150	37,362	16	30,739
La Réparation	1920	Poitiers	157	—	30,952	11	17,960
Mutuelle du Turf	1921	Bordeaux	26,578	90,000,000	3,317,686	786	2,236,116
Le Rhône	1918	Maisons-Laffitte	1,125	78,639,246	743,055	257	230,146
Urbaine et la Seine	1880	Lyon	5,000	—	1,165,000	331	774,770
Total			157,037	1,133,521,198	50,120,518	14,624	36,636,588

(1) Approximately. — (2) Formerly known as the Garantie Mutuelle d'Illiers. This company confines its operations strictly to l'Eure-et-Loir and the neighbouring Departments.

as by those of their articles of association as approved by the Minister of Agriculture. They are eligible for State aid provided that they reinsure only such reinsurance societies as themselves work in conformity with the regulations referred to above.

Two tables are here given, of which the first contains statistics, showing the operations of the joint stock and mutual insurance societies during 1933 (1) and the second the data referring to their work for a period of 46 years (2).

TABLE II. — *Statistics of the past forty-six years.*

Years	Number of persons insured	Value of stock insured	Assets	Number of claims	Amount of claims paid
1888	16,540	34,160,511	- 975,258	2,539	666,271
1890	20,953	38,386,387	1,197,750	2,971	819,557
1895	18,787	37,010,695	1,259,413	2,508	.804,204
1900	30,240	51,544,472	1,761,955	3,884	1,433,309
1905	42,430	76,772,422	2,690,804	4,991	2,264,849
1910	43,725	89,546,003	3,381,359	5,408	3,104,258
1911	51,052	104,213,611	4,008,550	6,060	3,255,488
1912	55,984	112,696,487	4,208,374	5,507	3,093,944
1913	68,246	142,575,508	5,161,572	5,763	3,512,670
1914-1919 (war period) . .	—	—	—	—	—
1920	70,255	343,073,723	11,368,647	5,240	6,858,611
1921	91,692	436,413,781	16,693,474	6,700	11,295,639
1922	88,861	430,732,056	18,029,213	7,568	12,717,442
1923	107,754	519,876,176	21,078,955	7,700	14,333,077
1924	88,291	605,261,399	23,553,326	7,623	14,973,312
1925	111,012	760,759,521	30,088,121	8,817	20,689,451
1926	124,119	906,353,874	36,618,289	10,394	25,796,033
1927	153,246	913,365,381	44,463,573	12,499	30,632,524
1928	141,356	1,113,465,350	46,862,223	13,688	34,167,513
1929	113,375	1,088,416,703	50,156,384	11,352	35,858,614
1930	136,159	1,204,553,902	54,184,551	11,982	37,810,330
1931	139,209	1,223,596,851	57,737,119	12,875	44,711,825
1932	116,639	1,202,676,397	53,418,863	13,878	43,240,605
1933	135,184	1,016,881,952	49,377,463	13,587	36,406,442

On 31 December 1928, the mutual agricultural insurance societies numbered 6,470 local mutual institutions and 80 regional or departmental reinsurance houses.

The Societies on this date had a total membership of 311,822 persons and the value of the stock insured was 2,101,040,060 francs. The number of the animals

(1) *L'Argus*, 12 August 1934, p. 1148.

(2) *L'Argus*, 5 August 1934, p. 1102.

insured was thus distributed: cattle, 707,480; horses, 201,481; other stock, 23,090.

The contributions paid amounted to 33,134,117 francs and the value of the losses sustained was 33,445,618 francs.

During the last two years there has been a slight increase in the number of the societies, but it should be observed that the number of members and the value of the stock insured have remained almost stationary (1).

A few figures will now be given to indicate the development of these societies.

In 1897 there were only 1,469 mutual agricultural insurance societies, with 87,072 members and stock insured, valued at 59,168,334 francs (2).

From this date onwards the rate of progress was considerably accelerated. In 1905 there were 5,765 societies with 318,146 members and insured stock valued at 330,545,529 francs. In 1910 the number of societies had risen to 8,380 with 456,561 members and stock insured for a value of 557,887,608 francs. In 1915 there were 9,998 societies with 506,003 members and stock insured, valued at 641,091,810 francs.

Naturally the war checked the upward movement. It started again however as soon as the war was finished, but at a much slower rate and in 1921 there were 10,212 local societies. After this year there was a marked falling off, and in 1922, the number was 6,995 and in 1928, after various fluctuations, 6,470 (3).

It should be remarked that, up to 1922, the statistics published by the Ministry of Agriculture included those societies only which had received a subvention from the Ministry and were therefore incomplete. On the other hand the figures supplied contained a considerable number of mutual societies, particularly live-stock societies, which had formerly received grants but which, owing to the war, had been unable to continue their activities, though the Department had not been so advised. In 1922 the Ministry began to make a fresh list of all the societies, including both those that had and those that had not received State assistance (4).

F. ARCOLEO.

(1) Report to the President of the French Republic, dated 15 July 1931, already quoted.

(2) EHRlich: *op. cit.*, p. 599.

(3) Files of the Mutualiste agricole. Paris, November.

(4) Ministry of Agriculture: Report to the President of the French Republic, etc., Paris 1924. — International Review of Agricultural Economics and Sociology, published by the International Institute of Agriculture, 1925, p. 122.

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ADERMANN (Dr. Waldemar): Die russische Baumwollindustrie nach dem Kriege. — Osteuropäische Forschungen. Otto Hoetzsch. Ost-Europa Edition. Berlin and Königsberg (117 pages).

The Russian cotton industry has made very appreciable progress in recent years. Manufactured textile products are now exported from the U. S. S. R. to foreign countries. The interest of this book, which describes briefly and vividly the birth of this industry, its organisation and its development, is obvious.

Before the war the cotton industry occupied the first place in Russian industry both from the point of view of the annual production and from that of the number of workers employed. It owed its development mainly to the customs policy of the country, to the cheapness of labour, and to the vast market of domestic consumption. The cotton industry in part developed at the expense of the linen industry, the products of which, although manufactured with home-grown raw materials, were too dear for the limited purchasing power of the population.

The position of the cotton industry in the system of planned economy is set out very objectively by the author, who draws his information from Russian sources. The principal points of view are clearly indicated and the reader obtains a very good general view of the situation of the cotton industry at the beginning of the first five-year plan of the U. S. S. R.

NOTICE

VITH INTERNATIONAL CONGRESS FOR SCIENTIFIC MANAGEMENT. — The Sixth International Congress for Scientific Management will be held on 15-20 July at the Central Hall, Westminster, London, S. W. I.

An Agricultural Section has recently been formed in connection with this Congress under the auspices of the Royal Agricultural Society of England and other authoritative agricultural institutions in England. With this Section the Ministry of Agriculture is also associated.

The question set down for discussion by this Section on 16 July is:—

“Standardisation as a factor in Agricultural Development, including Standardisation of Equipment, Methods and Produce”. The subject will be discussed under two headings: (a) Mechanisation on the Farm; (b) the use of accounts in Farm Management.

Further information may be obtained from the Secretary to the Congress, Mr. H. Ward, 21 Tothill Street, London, S. W. I.

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MONTHLY BULLETIN OF AGRICULTURAL ECONOMICS AND SOCIOLOGY

CORPORATIVE ORGANISATION IN ITALY

I. — THE ORIGIN OF THE CORPORATIVE SYSTEM.

The persistent disequilibrium which showed itself between production and consumption on the one hand and between prices and costs on the other, revealing the existence of deep-seated causes of depression, proved, in Italy as in other countries, the necessity of taking not only temporary measures but also measures of a permanent and organic character: amongst these, the reorganisation of the economic system on a corporative basis occupies a place in the front rank. This reorganisation was preceded by another important reform which served as a basis (1) for it, namely, the grouping of the producing classes in vocational syndicates and the regulation of collective labour relations (Law of 3 April 1926, No. 563, and Regulations for applying it of 1 July 1926, No. 1,130).

This Law is based on the following principles:

- (a) legal recognition of syndical associations and determination of their relation to the State;
- (b) regulation of collective labour contracts;
- (c) substitution of State justice (labour magistrature) for class self-defence, accompanied by the prohibition of strikes and lock-outs resulting from it.

The character of public bodies has been conferred on the syndicates which, accordingly, from mere class instruments have become bodies which, under the supervision of the State, exercise a certain number of functions of public interest.

The syndicate cannot be legally recognised unless it complies with certain specified conditions. It must in the first place contain a minimum number of members, proportionate to the total number of persons belonging to the class, and it must set before itself objects not only of an economic nature, but also of social and moral assistance, of instruction and education; further there can only be one recognised syndicate for each class of employers and of workers; the restriction to a single legally recognised syndicate is explained by the consideration that a multiplicity of syndicates would prevent a single representation of the class, dividing it into so many parts and rendering impossible that uniformity of treatment which must be assured to the persons belonging to the class. From this it follows that the syndicate represents all the persons within its area of operations belonging to the class for which it is formed; while, on the other hand, membership

(1) See "The New Syndical Organisation in Italy". *International Review of Agricultural Economics*, Year IV, No. 3, July-September 1926. International Institute of Agriculture, Rome.

of the syndicate is voluntary, the representation affects also the non-members, since these would otherwise remain without legal representation.

On the one side there are syndicates of employers, on the other syndicates of workers. This is the case for each of the great branches of economic activity.

Several associations of the first degree form a federation which combines all the employers or all the workers of a class in a given area (district, provincial, or regional federation) or of the whole country (national federation); several federations unite together to form a confederation.

Twelve confederations have been formed, that is, six confederations of employers and six of workers, in respect of the following branches: industry, agriculture, trade, sea transport, land transport, and banking. A thirteenth confederation has grouped artists and professional men.

It is the function of the legally recognised syndicates to stipulate the collective labour contracts which, when duly published, are fully effective in relation to all the employers and all the workers of the class to which the collective contract refers.

The conditions of labour are thus freely agreed upon between the representatives of the two parties. The contract, once stipulated, must be sent for publication to the government departments concerned, which are thus able to assure themselves that the contracts are legal. Beyond this, there is no intervention of the government in the making of labour contracts.

Employers and workers who do not observe the collective contract to which they are subject are legally liable in respect of non-fulfilment both to the employers' association and to workers' association which have stipulated the contract.

The collective contract, therefore, renders possible, as far as labour agreements are concerned, the conciliation of the interests of opposing classes, each represented by its own syndicate.

If agreement is not arrived at between the employers' syndicates and the workers' syndicates of a given class, the conflict of interest is brought for decision before the labour tribunal, set up by the law of 1926; this tribunal is formed by the ordinary judge who, when he is called upon to judge collective labour controversies, avails himself also of the opinion of experts.

But the syndical reform outlined above having, as we have seen, for its immediate purpose the organisation of the producing classes within the orbit of the State and the peaceful resolution of labour conflicts, obviously did not exhaust the economic field; the facts of production and distribution, which, owing to the crisis, had become more and more complex, remained outside its purview. In particular, in the matter of production, the work of regulation and organisation could not be entrusted only to the syndicates, which represent the interests of only one of the factors of production, but must of necessity become the task of a new type of organisation in which all the factors of production are combined under the direction of the State: to this type of organisation has been given, since the beginning, the name of "corporation."

Already in the Law of 3 April 1926, while Article 4 placed amongst the tasks of the syndical organisation "the increase and improvement of production," Articles 3 and 17 contemplated other organisations comprising the representatives

of the various factors of production, organisations which the Royal Decree of 1 July 1926 for the application of the Law defines explicitly as corporations (Article 42). This Decree, in fact, dedicates a whole chapter (Chapter III) to the legal regulation of the corporations, laying down that they are national in character; that they "group the national syndical organisations of the various factors of production, employers, intellectual and manual workers, for a specified branch of production or for one or more specified categories of undertaking;" that the corporation has no corporate existence but constitutes an organ of State administration; that it is the function of the corporation "to promote, to encourage and to assist all initiatives aiming at the co-ordination and the better organisation of production."

The Labour Charter (1), which is dated 21 April 1927, defined even better the nature and functions of the corporation. "The corporations," it laid down, "constitute the organisation by which are united the forces of production and they completely represent the interests of production. In virtue of this complete representation, the interests of production being national interests, the corporations are by law recognised as organs of the State. As representing the combined interests of production, the corporations can dictate compulsory rules for the regulation of labour relations and even for the co-ordination of production whenever they have had the necessary powers from the affiliated associations."

A still more decisive step was taken by the Law of 20 March 1930, No. 206, on the National Council of Corporations, in which the Council is considered as the General Assembly of the corporations and the sections of the Council as corporations set up for the great branches of production. But besides the functions attributed to the corporations by the Law of 3 April 1926 and the regulations issued under that law, which were transferred to the sections, there were conferred on the Council as a whole numerous functions of an advisory nature and, in addition, the power to issue compulsory rules regarding rates of pay and professional services and—a fundamental point—"rules for the regulation of collective economic relations between the various classes of production."

On the bases indicated, there followed a further development of corporative institutions, that is, an independent organisation of them and a more precise regulation of their powers and of their activity in the matter of production; this was accomplished by the Law of 5 February 1934, No. 163, of which we will now examine the fundamental principles.

II. — CONSTITUTION AND FUNCTIONS OF THE CORPORATIONS.

According to the definition given by the Head of the Government, the corporations are "the instrument which, under the ægis of the State, carries out completely, organically and in the general interest, the regulation of the productive forces, with a view to the development of the wealth, the political power and the

(1) See "The Labour Charter in Italy," *International Review of Agriculture*, Year XVIII, No. 5, June 1927. International Institute of Agriculture, Rome.

* Ec. 6 Ingl.

well-being of the Italian people." They act as an organisation whereby production can discipline itself, being composed of the producers themselves, understanding by this expression not merely the employers of labour, but the workers, both being legally organised by classes in vocational syndicates, under the terms of the Law of 3 April 1926, No. 563, and of the Royal Decree of 1 July 1926, No. 1,130.

Corporations have been set up for great branches of production (Decrees of 29 May and of 9 and 23 June 1934) and classified in three groups: (a) corporations for a whole productive cycle, agricultural, industrial and commercial; (b) corporations for the whole productive cycle, industrial and commercial; (c) corporations for the productive activity of services. In the first group, which affects agriculture, are the following corporations:—

1. The Corporation for Cereals;
2. The Corporation for Vegetable-growing, Flower-growing and Fruit-growing;
3. The Corporation for Vine-growing and Wine-making;
4. The Corporation for Olives and Olive-oil;
5. The Corporation for Sugar Beet and Sugar;
6. The Corporation for Animal Husbandry and Fishing;
7. The Corporation for Timber;
8. The Corporation for Textile Products.

The second group also includes eight corporations: they are the Corporations for Construction, for Metal-working and Engineering; for Clothing; for Glass and Pottery; for the Chemical Industry; for Paper and Printing; for the Extractive Industries; and for Water, Gas and Electricity.

The third group includes six corporations: those for the Liberal Professions and the Arts; for Internal Communications; for Maritime and Air Transport; for Hotel-keeping; for Insurance and Credit and for Entertainments.

In so far as the first group is concerned, we note that each corporation, embracing a complete productive cycle, has within its purview the whole series of facts which go from the production of the raw material to the sale of the product. In the formation of corporations efforts have been made to respect, as far as possible, the unity of the various productive cycles and to group together in the same organisation the classes bound together by relations of exchange. Thus the Corporation for Cereals includes, amongst others, representatives of cereal growing, of the threshing industry, of the milling industry, of the rice industry, of the alimentary pastes industry, of the confectionery industry, of the baking industry, of the grain trade and of the trade in the various products of the said industries. It also contains a delegate of the agricultural experts, one of the consumers' co-operative societies and one of the artisans. The direct representatives of the various interests, the number of whom is always proportionate to the importance of the interests, constitute, together with the representatives of the Fascist National Party and of the experts, the Council of each corporation (1).

(1) To give a concrete example, the Council of the Corporation for Cereals is composed of the Chairman and of 36 members, including 3 representatives of the Fascist National Party; 7 representatives of the employers and 7 of the workers engaged in the production of cereals; 1 representative of the

Thanks to this co-ordination of forces, while on the one hand it renders it easier to regulate the activities relating to every great branch of production, in the interests of individuals and of the general body of producers, on the other hand production is directly controlled.

The following tasks are entrusted to the corporations:

1. To issue general rules for the regulation of labour relations, as defined by Article 10 of the Law of 3 April 1926, No. 563;

2. To elaborate rules for the collective regulation of economic relations and for the regulation of production in the general interest; this is the most important power which makes of the corporation, as has been noted, the organisation through which the classes interested in production themselves control economic activity; the corporation exercises this function in pursuance of a proposal of the competent ministers or on the request of one of the affiliated associations, with the consent of the Head of the Government;

3. To determine rates for the economic services of the producers, as well as the scales of prices of consumption goods offered to the public in privileged conditions; this faculty of regulation has as its main object to enable the corporative organisations to intervene in cases where, by reason of the formation of monopolies or of the existence of privileged conditions in the management of property or services necessary for the community, their intervention is desirable or necessary in order to safeguard both the interests of the consumers and the superior interests of the national economy;

4. To formulate opinions on all questions which in any way affect the respective branch of economic activity, whenever that is requested by the competent public administration; the Head of the Government can, by Decree, lay down that, for particular subjects, the public administrations must request the opinion of the competent corporations; through this consultative function the collaboration of the economic classes with the State administration for the regulation of production will become more and more definite;

5. To make efforts to arrive at conciliation in collective controversies regarding labour; such efforts will be made by the corporation through the medium of the board of conciliation, composed of members of the corporation itself, chosen from time to time by the president, regard being had to the nature and to the subject of the particular controversies.

The rules, the collective economic agreements, and the rates above referred to, when drawn up, are subject to the approval of the General Meeting of the National Council of Corporations and become binding when they have been pub-

employers and 1 of the workers engaged in the threshing industry; 3 representatives of the employers and 3 of the workers engaged in the milling industry, in the rice industry, the confectionery industry and the alimentary pastes industry; 1 representative of the employers and 1 of the workers engaged in the baking industry; 3 representatives of the employers and 3 of the workers engaged in the grain trade and in the trade in the other products above enumerated; 1 representative of the consumers' co-operative societies; 1 representative of the agricultural experts belonging to the liberal professions; 1 representative of the artisans. Amongst the representatives of the employers there are 3 representatives of the managers of undertakings, 1 for agriculture, 1 for industry and 1 for trade.

lished by a Decree of the Head of the Government. This is in order to prevent the said provisions from reflecting mainly the economic interest of one vocational category in contrast with the wider interests of the whole national economy.

The corporations, which are State institutions, are set up by Decree of the Head of the Government and are presided over by a Minister or by an Under-Secretary of State or by the Secretary of the Fascist National Party. The Decree by which a corporation is set up lays down of how many members the Council is to be formed and how many are to be nominated by each of the affiliated societies.

In the corporations in which classes belonging to different branches of economic activity are represented special sections can be formed. With this rule is closely connected another rule which provides for the formation of corporative committees for regulating economic activity relating to particular products. For example in connection with the Corporation for Textile Products, the formation might be contemplated of a Committee for Silk, in which all the economic circles interested in that product would be called upon to collaborate.

By instruction of the Head of the Government and for questions concerning different branches of economic activity two or more corporations may be convened together, and have, with respect to such questions, the same powers that are attributed to the separate corporations.

The National Council, as the body formed for the co-ordination of the corporations, will endeavour to harmonise their action.

The task of protecting the separate vocational classes has accordingly been extended, by the introduction of the corporative system, from labour relations to economic relations, that is, to the larger and more complex field of production.

But since the intervention of so numerous an assembly to approve every single act of the corporations would result in slowing down corporative activity, the Central Corporative Committee was instituted by Article 15 of the Law of 20 March 1930 on the reform of the National Council of Corporations. This Committee has the following tasks: (a) to co-ordinate the activity of the various corporations in the general framework of the national interests; (b) to replace, in the intervals between its meetings, the General Assembly for all deliberations regarding the corporative organisations; (c) to give opinions on questions involving the political direction to be given to syndical action in relation to the national problems of production. The Committee is composed, as laid down by the Royal Decree of 27 December 1934, No. 2,101, of the Ministers of Corporations, of the Interior, of Grace and Justice, of Finance, of National Education, of Public Works, of Agriculture and Forests, of Communications, the Secretary of the Fascist National Party and the Vice-Presidents of the 22 Corporations. It also includes the Presidents of the Syndical Confederations of Employers and of Workers, the President of the Fascist National Institute of Co-operation, etc.

III. — THE REFORM OF THE SYNDICAL ORGANISATION.

In tracing the plan of the corporative system, principles have also been laid down for the reform of the syndical organisation, principles of which the essential aim is to place the class associations in close contact with the corporative insti-

tution. The law having asserted the principle that each vocational class must have its own individuality and must participate directly in the corporation by means of its own representatives, in order to give voice to the interest of the economic group in question, it results that the associations linked together in the corporation must have syndical autonomy. It is, in fact, recognized that only by means of a direct current of relations between syndical class and corporation can genuine and effective expression be given to all the requirements, the aspirations and the conflicts of the economic groups which the corporation is called upon to ascertain and to conciliate within the wider framework of the interests of the nation.

But to attain this object it has not appeared necessary to suppress the confederations. Article 7 of the Law of 5 February 1934 lays down, in fact, that "the associations linked together by a corporation become autonomous in syndical matters, but continue to be members of the respective confederations."

The confederations have been reduced in number from 13 to 9, and will represent only the more important branches of productive activity (1).

The tasks of the confederations may be summarised as follows: to supervise the affiliated associations; to assure the co-ordination of the activity of the associations and the establishment and working of services of common interest; to watch over the economic and financial working of the associations; to encourage the formation of institutions for economic assistance, for vocational instruction, for moral and national education; to appoint representatives on all the bodies, committees and institutions on which their representation is contemplated or allowed; to proceed to the negotiation of collective labour agreements and agreements for the regulation of collective economic relations involving the general interests of the vocational classes incorporated in the affiliated associations.

As the functions, already indicated, of supervision of the affiliated associations must essentially fall within the competence of the State, they accentuate the character of the confederations as bodies to which functions of the State are delegated (2).

(1) There are four Employers' Confederations, *viz.*: (1) the Confederation of Farmers; (2) the Confederation of Manufacturers; (3) the Confederation of Merchants and Shopkeepers; (4) the Confederation of Credit and Insurance Institutions. The Workers' Confederations are five in number, *viz.*: (1) the Confederation of Workers in Agriculture; (2) the Confederation of Workers in Industry; (3) the Confederation of Workers in Trade; (4) the Confederation of Workers in Credit and Insurance Institutions; (5) the Confederation of Persons exercising a Liberal Profession and of Artists. On 31 December 1934 the Fascist Confederation of Farmers represented 2,658,266 farmers; the number inscribed was 712,697. On the same date the Fascist Confederation of Workers in Agriculture represented 2,744,072 workers; the number inscribed was 2,023,750.

(2) The organs of the confederation are: (1) a Council on a wide basis, comprising the managers of the affiliated associations and of the national syndicates and other representatives of the class, the main functions of which are to determine the general policy of the activity of the confederation and to form a judgement on the work carried out by the executive bodies by examining their moral and financial reports; (2) an executive committee, appointed by the council, which assures the continuity of the working of the confederation, particularly in regard to the administrative part.

The president of the confederation holds an important position. He has a wide range of duties, not only as the responsible head of the organisation, but also in relation to the function of the confederation as the link between the class associations and the central authorities of the State. His nomination, accordingly, rests with the Government.

The special characteristics of agriculture have made it desirable to form, in connection with the two agricultural confederations, technical and economic sections for the study of the problems of production and for co-ordinating the syndical action with the corporative action.

For carrying out their tasks in the different parts of the country, the confederations form offices of their own, called "unions," with a sphere of action embracing sometimes a province, sometimes two or more provinces, which co-ordinate the work of the local organs of the national class associations.

The syndical associations combined together by the corporation are the national class federations, which, like the confederations, are corporate bodies, and which nominate representatives to serve on the councils of the corporations.

The Fascist Confederation of Farmers is composed of the following national federations:

1. The Federation of Landowners and Tenants Operating Farms;
2. The Federation of Landowners whose Lands have been let;
3. The Federation of Landowners and Tenants who Directly Cultivate their Lands;
4. The Federation of Managers of Farms.

The Fascist Confederation of Agricultural Workers is composed of the following national federations:

1. The Federation of Technical and Administrative Employees of Farms and Forestry Undertakings;
2. The Federation of Tenants and Metayers;
3. The Federation of Wage-earning Labourers and Day Labourers;
4. The Federation of Specialised Agricultural, Stockbreeding and Forestry Labourers.

The Federations have the following objects: to encourage the technical and economic development of the vocational class which they represent; to negotiate collective labour agreements or agreements for the regulation of the collective economic relations interesting the said class; to proceed, as we have said, to the nomination or appointment of representatives of the class in the corporations or organisations or institutions where such representation is contemplated or required; lastly, to take initial steps in the matter of assistance.

To render more practical and more rapid the attainment of the objects above-mentioned, the formation of provincial or interprovincial syndicates and of national syndicates is contemplated.

The formation of local syndicates is regulated with great precision, since on the local syndicate, the primary cell of the system we are studying, turns the development of the activity of the organisation. It has all the functions of the national federation except the administrative functions, and it has in addition the delicate function of the admission of members.

The local syndicate has as its organs a general meeting, a managing committee and a manager; through these it promotes the interests of the vocational class. In the local syndicate the class is called upon directly to study its own problems, to nominate its own managers, to discuss its own needs and to learn the principles of that collaboration in the sphere of national interests which forms the basis of corporative action. The local syndicate works through its constituent organs, the communal syndicates, in every place where even a small group of producers exists.

With the slight modifications above indicated and the changes made in the incorporation of some vocational classes (1), the syndical system has been adapted to the structure and working of the corporations.

In thus completing the construction of the syndical and corporative system the Government has re-affirmed the principle on which its working is based, which is that all individual interests must be subordinated to collective interests and that the well-being of individuals must be harmonised with the general welfare of the nation.

IV. — THE CORPORATIONS AT WORK: THE FIRST RESULTS OF CORPORATIVE ACTIVITY.

Having thus explained briefly the constitution and the functions of the corporations, let us now see how they work in practice.

The President of the Corporation prepares, in the first place, the agenda of the subjects to be dealt with and transmits it to the general secretary of the National Council of Corporations, who submits it to examination by the Ministers concerned.

The agenda, with the remarks of the ministers, is then submitted to examination by the Head of the Government.

All the resolutions voted by the Corporation are transmitted to the general secretary of the National Council of Corporations, who arranges for communicating them to the departments and other bodies concerned.

The President of the Corporation has power to invite persons who are experts in the problems under discussion and the directors-general and other heads of branches of the Ministries concerned to attend the meetings of the council of the corporation, without, however, having the right to vote. He can ask the National Council of Research (2) or other technical bodies to give their opinion or to carry out inquiries regarding the problems that are being dealt with.

The Presidents of the national confederations of employers and of workers concerned can also attend the meeting and also, subject to the authorisation

(1) The Fascist National Syndicate of Agricultural Experts has been attached to the Confederation of Persons Exercising Liberal Professions and of Artists. See "L'organisation syndicale corporative de l'agriculture en Italie" by Prof. Franco Angelini. Rome, Imprimerie de l'Art de la Presse, 1935.

(2) This Council was formed in Italy for the co-ordination and direction of scientific research.

of the president of the corporation, the presidents of the National Institute for Foreign Exchanges, of the Fascist National Institute of Co-operation, etc.

The first corporation convened was that of animal husbandry and fisheries. The problems placed on the agenda were the following:

1. The defence of typical cheeses and the regulation of the voluntary consortia;
2. The regulation of the production and sale of milk for human consumption and of manufacturing milk and measures to increase the consumption;
3. Measures of insurance and social assistance on behalf of fishermen;
4. The renewal of the deeds embodying the collective economic agreement for the regulation of the sale of milk in the city of Rome;
5. The organisation of wholesale fish markets;
6. The regulation of the installation of motors in fishing vessels;
7. The relations between the owners of fishing vessels and the preserving industry, in view of an increase in the national production;
8. The national live stock production and the regulation of the importation of meat;
9. Examination of the condition of the tunny-fishing industry and of the market for tunny in oil.

On each of these questions, the secretariate of the National Council of Corporations had drawn up a special report intended to serve as a basis of discussion. The report contained a statement of the arguments and proposals of the syndical organisations concerned and of the competent ministerial offices.

In regard to the defence of typical cheeses and the regulation of the voluntary consortia, the corporation in question resolved:

1. That it is desirable, with a view to a more effective protection of the cheesemaking industry and of the typical cheeses of which there is a large sale, both on the home market and in the export trade, to adopt a mark which, while taking account of the intrinsic characteristics and of the composition of the cheeses, determined in advance by the organs of the State, should guarantee their quality and special traditional characteristics;
2. That these marks should be set up by voluntary consortia of recognised producers;
3. That the voluntary interprovincial consortia for the defence of typical cheeses must be confined to products the reputation of which on the home and foreign market exercises a preponderating influence on the conditions of the national cheesemaking industry (the "grana" cheeses, gorgonzola, pecorino, cacio cavallo, etc.);
4. That for each type of cheese only one consortium should be recognised, divided into sections corresponding to specified regions of production and to types of product.

The same corporation further recognised that it is desirable to promote, through the medium of the technical and syndical organs, action with a view to finding outlets for larger quantities of milk in other customary uses (the making of butter or cream, human consumption, the rearing of calves) and to regulate the distribution, particularly in districts where land improvement had

been carried out, of draught cattle and cattle for meat production rather than cattle specialised for the production of milk.

In connection with the production and marketing of milk for human consumption, live stock production and the regulation of the importation of meat, the Corporation of Animal Husbandry and of Fisheries deemed that it was desirable to improve the economic bases of the national stockbreeding industry and to encourage a better equilibrium between the two fundamental branches of animal husbandry, milk production and meat production, by assuring, amongst other measures, to these products prices that are equitable and are proportionate to the cost of production; by encouraging a large consumption as food of milk and its products; by attenuating the influence exerted on the home market by the importation of live stock and of meat from abroad; by improving the Italian breeds of live stock, especially from the point of view of production, and by valorising the products as far as possible.

The corporation decided to submit to the approval of the Central Corporative Committee the following measures:

1. The fixing of the percentages of fat which the different types of cheese must contain and the energetic repression of frauds in the use of margarine for the preparation of products intended for human food;

2. (a) Encouragement of the consumption of milk and regulation of the establishment and working of the "milk centrals," which, as they must be regarded as institutions of a purely sanitary and public utility character, without any speculative object and without industrial profits, must be conducted on corporative lines by the classes concerned;

- (b) Organisation in urban centres, where there is no milk centre, of consortia on a corporative basis, which shall direct and assure the production of milk for human consumption, as well as the distribution to the consumers;

- (c) Express prohibition of the house to house sale of milk either by dealers or by producers;

3. To entrust to a corporative organisation supervised by the State the task of regulating the entry of live stock from exporting countries and the distribution within the country of the quotas of live stock to be imported, thus preventing the disturbance of the home market;

4. To fix quotas also for the importation of fresh, chilled and frozen meat, as well as of bacon, lard and processed meat products by determining the maximum quantity allowed to be imported each year, on the basis of the real requirements of the national food supply;

5. To regulate the live stock markets of the great centres of consumption, in such a way as to make it possible for the producers, whether isolated or in groups, to place their animals on the markets directly, avoiding any form of monopoly;

6. To reorganise the slaughter of live stock on more economic and more modern lines, eliminating charges that are not justified and waste of any kind;

7. To adjust the taxes on consumption in such a way as to make them correspond better to the present value of live stock, taking also account of the desirability of encouraging the consumption of the meat of cattle, sheep and

pigs and the products derived therefrom, which are at present more heavily burdened with charges, while other kinds of meat, like that of poultry, as well as meat pastes, are exempted, which offers considerable inducement to importation;

8. Revision of the present railway and maritime transport freights (live stock, milk, fodder, etc.);

9. To give a wider development to the organisations engaged in making experiments in animal husbandry and cheesemaking and to the laboratories for the analysis of dairy products with a view to the prevention of adulteration and frauds.

The Central Corporative Committee afterwards approved the conclusions reached by the Corporation of Animal Husbandry and of Fisheries (1) regarding the regulation of meat imports, of slaughter-houses and of markets, and invited the Ministries of Corporations, of Agriculture, of Finance and of Foreign Affairs to set up an inter-ministerial committee, on which the syndical organisations concerned should be represented, for the purpose of regulating the entry of live stock from exporting countries and the distribution within the country of the quotas of live stock to be imported.

In addition, other resolutions were adopted with a view to carrying out the recommendations which we have reproduced above.

The Corporation of Textile Products was the next to meet. The questions placed on the agenda were the following:

1. Problems relating to silk: (a) means of improving the production of cocoons and of maintaining and increasing amongst farmers interest in their production; (b) questions concerning spinning and reeling of silk; (c) questions concerning weaving and the use of pure silk or of silk mixed with other textile fibres; (d) export of silk and goods manufactured from silk;

2. Problems relating to flax and hemp: (a) possibility and advisability of extending the cultivation of hemp and flax; (b) methods and means of increasing the absorption of the home-grown raw material and of articles manufactured from hemp, flax, or from hemp and flax mixed, by the home and international market; (c) possibility of co-ordination with the use of other textile fibres;

3. Increase of the home production of wool;

4. Regulations for the unification of typical fabrics;

5. Determination of principles for the regulation of the retail sale of yarn.

In regard to the problems relating to silk, the Corporation of Textile Products decided, in view of the specially depressed condition from which the national silk industry is suffering, to call the attention of the Ministry of Corporations to the desirability of setting up a Corporative Committee for the regulation of the production of silk in its different branches, under the terms of Article 6 of the Law of 5 February 1934.

In regard to the problems concerning hemp, the Corporation, being convinced that the preservation and valorisation of hemp production is a national necessity,

(1) For the sake of brevity, we do not refer here to fishery problems.

took note of the new uses to which hemp is being put in the textile industry as a result of new methods and new industrial processes; it saw in these new uses the best way of increasing the production and utilisation of hemp and thereby replacing imported textile fibres, and it deemed it desirable that the researches and studies in this field should be still more actively pursued, not only by the industrial organisations, but also by specialised scientific and technical institutions; it further deemed it necessary to draw attention to the desirability of encouraging a greater utilisation of hemp, to attain which articles manufactured from pure hemp or containing hemp can usefully be substituted—in virtue of their qualities, of their resistance and their greater durability—for articles manufactured with imported fibres.

As to flax, the same Corporation expressed the opinion that, in order to bring about an increase in the national production, it was desirable to propose to the Central Corporative Committee: (a) that the present quota of 1,000 quintals of flax-seed allowed to be imported free of duty should be raised to 3,000 quintals, with a view to extending the cultivation of flax; (b) that the Ministry of Agriculture and of Forests should contribute, by the means at its disposal, to the setting up in the centres of production of scientific installations for the retting and scutching of flax.

With regard to the increase in the national production of wool, the Corporation affirmed: (a) that it is technically possible by the intensification of stock-breeding and the selection of stock in Italy and by the extension of stockbreeding in the colonies to attain a level of production which would satisfy to a greater extent the needs of the national industry; (b) that the economic problems connected with the increase in the flocks of sheep could only be solved if the valorisation of home-grown wool were preceded and accompanied by that of other products of sheepbreeding, more particularly meat and milk.

The Corporation afterwards took cognisance of a series of proposals for the increase of the pastoral industry in general, for the intensification of experimentation and of propaganda with a view to the selection of sheep as well as to the increase of the consumption of meat and of sheep's milk products, for a revision of transport charges on sheep and sheep-breeding products, etc.

The Central Corporative Committee examined the proposals summarised above and took the necessary decisions for carrying them out.

The Corporation for Sugar Beet and Sugar also met and discussed the following subjects:

1. Production of alcohol from sugar beet for use as motor fuel;
2. Fiscal policy in reference to the consumption of sugar;
3. Regulation of the cultivation of sugar beet;
4. Control of the production and trade of sugar beet seed;
5. Relations between the sugar industry and the industries which consume sugar;
6. Regulation of the selling prices of sugar.

Amongst the various conclusions reached by this corporation the most noteworthy was that by which a plan was proposed for the extraction of alcohol from sugar beet whereby the desired quantity would be gradually reached.

In regard to the fourth item, the Corporation affirmed the necessity of producing in the country all the seed necessary for consumption. It further pointed out the desirability that the production and distribution of the seed should be controlled by a consortium of producers.

The Central Corporative Committee subsequently fixed at four years the period within which the production of alcohol for use as motor fuel must reach the necessary quantity for mixing with all the petrol used in the proportion of 20 per cent. in volume of alcohol to 80 per cent. of petrol.

The corporative rule for the control of the cultivation of sugar beet adopted by the central Committee is also of considerable importance. This is a question which is of special interest to Northern and Central Italy. The farmers of those regions can advantageously cultivate this crop, which is certain to be remunerative since there exists in the country a sugar industry capable of absorbing the product. However, this industry has limits that cannot be exceeded and are determined by the capacity of the market to absorb the sugar produced; hence the necessity of regulating the production in order to prevent an injurious disequilibrium. But this control must not favour some persons to the disadvantage of others; the production must, therefore, be equitably distributed. The Central Corporative Committee has, accordingly, decided that the growers of beet for the production of sugar may only cultivate in the 1935 season a given area of land and that they may only consign to the sugar factory the beet produced on that area; it is further prohibited that a farmer who has signed an agreement to cultivate beet for the production of sugar should also cultivate sugar beet for use as feed for live stock.

On the basis of the resolutions of the Central Corporative Committee various measures have already been issued (1) for the corporative control of the national economy and others will follow in due course.

The examples above set out will give an idea of the collaboration of the corporative organisations in the solution of the problems of production and distribution and in the struggle against economic depression and against the consequences of the crisis.

G. COSTANZO.

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AGRICULTURAL CO-OPERATION IN YUGOSLAVIA

I. — HISTORY OF THE CO-OPERATIVE MOVEMENT BEFORE THE UNIFICATION OF THE KINGDOM.

In Yugoslavia, which is composed of Serbia and various regions which before the Great War formed part of other States, uniformity of development in the co-operative movement has not been possible. The foundation, organisation and development of co-operative societies were determined by the special political, economic, social and national influences of the different States.

The Slav peasants (Serbs, Croats, Slovenes, etc.) who now inhabit the territory of Yugoslavia have for many centuries led a patriarchal and isolated existence. Cultivation of the land and nomadic stock-breeding were practised rather on behalf of their lords than to supply their own urgent needs.

Since the XVIIIth century, however, the Slav peasants have tried to group themselves into family communities, *zadrugas*, in order to facilitate the cultivation of the land and to protect their interests. At first these groups were in the nature of an association between members of one family, but later on the notion was extended to associations of neighbouring families.

The rapid and strongly marked development of the towns at the beginning of the XIXth century, the gradual decay of the power of the overlords, the need felt by the peasant farmers for an organisation for mutual financial assistance to facilitate payment of taxes and to afford protection against the moneylenders, and finally the awakening of social, national and religious sentiments in response to the propaganda efforts of the intellectual classes, all tended to bring about a modification of the primitive conception of grouping as held by the Slav farmers.

Beginning with the time when the principle that "the land belongs to him who cultivates it" became more deeply rooted, and after Serbia had in 1830 succeeded in obtaining for the peasants liberation from the servitudes, which were replaced by taxes in kind, the idea of a wide form of mutual collaboration among the Slav farmers became mainly inspired by economic motives.

Later the substitution of payments in kind by money payments, first introduced by the reform of Prince Milos in 1836, brought about a veritable

transformation of the agricultural economy of the Slav farmers, who now found themselves obliged to sell their crops in order to obtain the money required for the payment of taxes. During this same period the desire arose among the rural masses to buy the land which they were cultivating as tenants, but, from want of funds and of any organisation capable of supplying funds, the peasant farmers fell even more than before into the hands of the money lenders.

From this time, it may be said, the *zadrugas* became more fully alive to the necessity of transforming themselves into true co-operative societies of the type that appeared in 1830 to 1850 in England, France and Germany.

The object of the first Slav (Serbian and Croatian) co-operative societies was not merely to collect money from the farmers for distribution among such as had need of it, but also to engage in cultivation, stock-breeding and the supply of farming requisites for joint utilisation.

The more specialised co-operative societies for the different branches of agriculture did not appear until much later.

Before examining the structure and development of the co-operative movement in Yugoslavia, it will be of advantage to give a brief description of the development, up to the time of the Balkan wars, of the Slav co-operative movement in each region separately.

Serbia. — The forerunners of the co-operative movement in Serbia were, as has already been said, the family communities, *zadrugas*. The first co-operative societies began to appear spontaneously and sporadically in the neighbourhood of the town centres. In comparison with other parts of Yugoslavia, the initial development of Serbian co-operation began very late and it was not until 1894 that the first agricultural co-operative credit society of the Raiffeisen type was founded in the village of Vranova (near the town of Smeredova). The principal object of this society was the protection of the members against the moneylenders and middlemen. This first agricultural society, according to its rules, could lend money to members only, and for periods not exceeding two years. In addition to its purely financial objects, this society bought and distributed seeds, machinery and other farm requisites among its members either for cash or on credit. Thanks to State assistance and to that of the educated classes (teachers, clergy, etc.), the Serbian co-operative movement developed fairly rapidly. From 1904 to 1908, the total number of members of co-operative societies rose from 17,858 to 26,616. In 1908 all these members of Serbian co-operative societies, for the most part farmers, were grouped in 654 societies. The value of the property of these societies during the same period amounted to 2,400,000 dinars, that is, 3,683 dinars per co-operative association and 90 dinars per member. A Central Bank, established in Belgrade in 1908 for the purpose of serving as a clearing bank for the co-operative societies, received any surpluses accumulated by the societies and granted loans to co-operative societies requiring assistance. Thanks to the generous government credit, the Central Bank, in 1909, granted loans up to the sum of about 1,000,000 French francs, while the total sums remitted by the local co-operative societies did not exceed 300,000 francs.

From 1900 the differentiation of the first Serbian co-operative societies, known as agricultural credit societies, began. The first co-operative distributive society was founded at the beginning of 1903 on the Rochdale principle and in 1909 the number of these societies had risen to 42. In spite of the great development of cattle breeding, the co-operative dairy societies evolved very slowly and after long delay. In 1909 there were only 12 co-operative dairy societies in Serbia. The co-operative wine-making societies, of which there were only 3 in 1909, made even slower progress.

The *co-operative societies for the joint utilisation of agricultural machinery*, however, had made marked progress and by 1909 there were 153 already in existence in Serbia.

As the result of the Balkan wars and of the great war, there is an absence of official, and even of less exact, information on the development of the Serbian co-operative movement during the period 1909 to 1919, which makes it impossible to trace its history although it is almost certain that these calamities had an adverse effect on the the development of Serbian co-operation.

Croatia-Slovenia. — As in Serbia, so in these regions, "family communities" existed from a very remote period. To these communities as well as to the foundation of the Croat-Slovene Agricultural Society at Agram (Zagreb) in 1849 and of the Agricultural Society for Slovenia founded at Osjek in 1875 may be traced the origin of the true agricultural co-operative societies; in fact, after the promulgation of the Austro-Hungarian law dissolving the "family agricultural communities," the rural masses hastened to group themselves in agricultural co-operative societies. For this reason the first co-operative society was founded at Brdovac, near Agram, in 1873. The autonomous Government of Croatia-Slovenia had made efforts, since 1882, to encourage the establishment of co-operative credit societies of the *Schulze-Delitsch* type, but this type did not prove acceptable to the farmers. By virtue of a law of 1898, two Central Co-operative Credit Societies were founded at Agram and Osjek, which stimulated the establishment and development of new co-operative credit societies. In 1909, in fact, there already existed 271 of these societies in Croatia-Slovenia with about 55,000 members. In addition, the foundation of the Croatian Rural Bank, at Agram in 1901, in accordance with the resolutions of the first Croatian Catholic Farmers' Congress, gave an impetus to the foundation of agricultural co-operative societies. In 1909 the number of these societies was already 225 with about 34,500 members.

At the same time as the Croats, the Serbs had founded at Agram in 1898 a Union of Serbian Rural Banks which by 1909 had succeeded in establishing 297 rural banks grouping more than 10,000 farmers. The total number of all the co-operative societies in Croatia-Slovenia in 1909, including the Croat-Slovene agricultural societies and the Serbian co-operative societies, amounted to 877 with a membership of about 110,000 *i. e.*, 44 per thousand of the inhabitants were members of co-operative societies. The rivalry between the Croats and Serbs for the establishment of co-operative societies in Croatia-Slovenia under the Austro-Hungarian rule stimulated considerably the growth of the co-opera-

tive movement among the rural masses. The Croats, however, in founding co-operative societies, were engaged in a twofold struggle, one political and national against the Austro-Hungarian Empire; and the other religious against the Serbs. This conflict naturally retarded the differentiation of the co-operative societies according to the type of activity. In spite of the support of the autonomous government and of the public authorities, the co-operative dairying societies developed slowly and in 1909 only 29 were in existence. The progress of the co-operative wine-making societies was also slow and at the same period only 4 had been formed.

The Croatian co-operative societies, which had not suffered from the Balkan wars and were in a more favourable position during the great war, were able to develop with little interruption during the period 1909-1919; in fact, in 1919 the Federation of Agricultural Co-operative Societies was founded at Agram, in which were grouped 291 Croati-Slovene co-operative societies and 64 Croatian co-operative societies established in Bosnia and Herzegovina.

Bosnia and Herzegovina. — The forerunners of the agricultural co-operative societies in these regions were the *pripomorna zacladas* a kind of *monts-de-piété*, founded by the Austro-Hungarian Government in 1886. Actually their origin dates back to a far more remote period. Under the Turkish domination the Slav peasants were obliged to pay taxes to their overlords either in money or kind. In order to meet these obligations the Slav peasants collected a part of the harvest due to the public treasury in special barns; this was afterwards sold and any surplus remaining after the payment of taxes was used to form a public utility fund. In this way the *pripomorna zacladas* were able to grant loans to farmers at a very low rate of interest. These *pripomorna zacladas* have remained in existence until today, but the number now does not exceed 50. As they are State institutions they cannot be replaced by co-operative societies. For this reason the true co-operative societies appeared much later in Bosnia-Herzegovina, and their progress has been solely due to the influence of the Serb-Croatian co-operative movement. The Serbs established a peasant farmers' co-operative society at Orasje in 1904 and in 1905 the Croats founded a Croat peasant co-operative society at Nevesinje. In 1911 there were in existence in the two regions 68 Croatian co-operative societies while in 1914 there were 128 Serbian co-operative societies.

Dalmatia. — Under Italian influence co-operative societies appeared in Dalmatia at a very early date; in fact, in 1864 the *Cassa di mutuo credito* was already in existence. The strongest impetus was given to the co-operative movement by the Austrian law of 9 April, 1873, on the co-operative societies. In 1874 three co-operative societies were established: — (1) The co-operative dairy society of Makarska; (2) *La Società per la pesca delle spugne* and (3) The *Consorzio di risparmio* at Zara. In 1875 the *Consorzio Apistico di Solta* was founded and in 1879 a new co-operative credit society. These co-operative societies, however, yielded to the pressure of the Serbian co-operative movement and were liquidated or transformed and in 1896 the Serbs began to found

co-operative societies of the Raiffeisen type in Dalmatia. Already in 1900 there were 32 of this type in existence and in 1906, there were 108. In 1907 the Federation of Serbian Agricultural Co-operative Societies was founded at Split and was federated with the Federation of Belgrade in 1922.

II. — CO-OPERATIVE LEGISLATION.

As no special legislation existed, the first Slav co-operative societies, formed in the various regions of what is now Yugoslavia, came under the provisions of the Commercial Code relating to economic and commercial societies.

The first special legislation on co-operative societies is found in the regions which previously formed part of the Austro-Hungarian Empire.

In fact, the first Slav co-operative societies in *Croatia-Slovenia*, after having been regulated by the Austrian law of 26 April 1852 on economic-commercial associations, came under the Austrian law of 9 April, 1873, which referred exclusively to co-operative societies. This law established special provisions on the founding, organisation and activities of co-operative societies of all descriptions. The most striking feature of this law was the concession to co-operative societies of complete independence as regards local authorities, and the permission to found co-operative societies of two principal types, namely, limited liability and unlimited liability.

Among other Austrian legislative measures for the regulation of co-operative societies, mention must be made of the laws of 21 May 1873, 27 December 1880, and 1 June 1889 which besides containing provisions relating to the audit and to the control of their activities also granted the societies various privileges, and especially those of a fiscal nature.

It is also of interest to note that the law of 1 June 1889 principally favoured the development of co-operative credit societies in Slovenia. All these legislative measures while promoting the development of the Slav co-operative movement, at the same time encouraged the formation of centres of national culture among Slavs. This result had not formed part of the intentions of the Austro-Hungarian Government which hastened to limit the political activity of the Slav co-operative societies; in fact, the law of 10 June, 1903, on the co-operative societies imposed compulsory inspection of all co-operative societies at least once a year. According to this law, audit was to be carried out by the local authorities and should not be confined to book-keeping but should also be extended to the various activities in order to ascertain if these conformed to the provisions established by the rules.

In *Serbia* the first co-operative society was founded on 29 March 1894 and in 1898 there were already more than 100 in the country. In view of the rapid progress made by the co-operative movement, the Serbian Government on 3 December 1898, passed a special law on agricultural co-operative societies and co-operative societies of artisans. This law gave a precise definition of a co-operative society, its aims, and activities, and also laid down very severe rules for the control and supervision of its activities. At the same time this law granted privileges of a fiscal nature to the co-operative societies exempting

them from direct taxation "on labour, capital and income" and from other special taxes.

It must, however, be remembered that in the year before this law was passed, a loan fund for the benefit of the agricultural co-operative societies was established on 13 August 1897, by means of a law on the encouragement of agricultural co-operative societies. In addition, the law of 4 October 1899 exempted these societies from payment of postal charges and on 26 January 1900, a law was passed on the encouragement of agricultural co-operative societies by which new privileges were granted for the foundation of these societies. In 1904 a special law accorded the General Union of Serbian Agricultural Co-operative Societies, founded in 1895 at Smeredovo, the right to audit the activities of the local co-operative societies and of the Central Co-operative Bank.

The numerous and efficacious legislative measures for the benefit of the Serbian co-operative movement placed this movement in a much more favourable position in relation to the Slav co-operative societies of the other regions of what is now Yugoslavia. As no special legislation existed, the co-operative societies of *Dalmatia*, *Bosnia*, *Herzegovina* and *Vojvodina*, which had been founded and encouraged by the Serb and Croat intellectual classes, were regulated by the laws in force for the Croatian and Serbian co-operative movements.

After the establishment of the Yugoslav Kingdom, numerous proposals were put forward and examined with the object of unifying legislation on the co-operative movement throughout the whole of Yugoslavia; but owing to technical, administrative and other difficulties, up to the present none of these proposals have become effective. The Yugoslav co-operative societies in the various parts of the country continue to be regulated by the different laws inherited from the old Serbia and the former Austro-Hungarian Empire.

Among the legislative measures on the co-operative movement in general passed after the Kingdom of Yugoslavia was established, mention may be made of the law of 12 June 1925, on agricultural co-operative credit, which however, applied solely to societies of this type. This law contained precise regulations for the establishment of new agricultural credit societies the object of which was to ensure to their members the necessary credit for developing and improving agricultural production (including stock-breeding, agriculture, fisheries, etc.). According to Article 16 of this law the local co-operative societies, constituted by the law, also the central agricultural associations (agricultural co-operative societies, agricultural syndicates, etc.) may form part of the Provincial Federation of Agricultural Credit.

The agricultural co-operative credit societies grant short or medium term loans to their members. The short term loans must be repaid after the harvest or after the termination of the work for which they were granted, and in all cases at the end of one year. The medium term loans are granted on security, whether pledge of State guaranteed bonds or of cattle or farm implements bought, or, even by mortgage of real estate guaranteed. They must be repaid in six-monthly instalments of equal amounts, including interest, and within a period not exceeding a maximum of eight years. Interest payable on loans

should not exceed the discount rate of the National Bank by more than 4 per cent. By this law a new spirit has been introduced into the Yugoslav co-operative movement, one free from all regional, political or social tendencies.

Owing to special State grants, 1,200 Yugoslav agricultural co-operative credit societies were established in 1927 out of a total of 3,700 co-operative credit societies. In the law of 21 September 1929 on promotion of the development of agriculture, article 19 was inserted relating to the co-operative societies. This Article states that the reporters (commissioners specially instituted by this law for superintending the encouragement of agriculture) should keep in close contact with the co-operative societies and should carry out propaganda among the rural masses for the foundation of new co-operative societies.

With the exception of this law which relates to Yugoslav co-operation in general, the other legislative measures, passed during the last few years, apply to the different branches of the co-operative movement. For example, there may be noted the law of 1922 on the establishment of agrarian communities on a co-operative basis whereby 137 agrarian communities were founded in 1923, and the law of 31 December 1931 on the co-operative health societies which contains special provisions for the foundation and scope of these societies, with a view to the centralisation of the co-operative health societies which were rapidly appearing in all parts of the country.

Among the special laws having an indirect bearing on the co-operative movement, mention may also be made of the law of 21 December 1929 for the promotion of stock breeding. Several articles contain special provisions for founding co-operative societies for selective breeding of cattle. As a result of this law six new Central Unions have been instituted in the country grouping co-operative societies of this type. In addition, two other recent laws may be recalled which have a indirect bearing on the various branches of the Yugoslav co-operative movement: the law of 1931 on fisheries and the law of 1933 on apiculture which have contributed towards the establishment of new co-operative societies of this type.

In concluding this brief survey of the legislation which has directly or indirectly influenced the progress of the Yugoslav co-operative movement after the Kingdom was established, the provisional enactment of 20 April 1932 for the protection of farmers must not be omitted. This law, by granting considerable facilities to debtor farmers, somewhat unfavourably affected the financial interests of the co-operative societies, particularly those dealing with agricultural credit. Some anxiety was felt at the development of the financial crisis in the co-operative societies and the Government hastened, on 23 November 1933, to issue a special Decree for the protection of co-operative credit societies and their Unions, the object being to endeavour to nullify the effects of the preceding law.

Naturally these isolated legislative measures which only refer to particular categories of the co-operative societies, together with the legacy of old laws which have remained in force and with the dependence of the societies from the different Regional Unions, create confusion and hinder the normal development of the Yugoslav co-operative movement. The necessity for a special uni-

form law on all the co-operative societies throughout Yugoslavia becomes increasingly urgent as proved by the *desiderata* expressed in the last Congress of the General Union of Co-operative Societies of Yugoslavia which took place at Belgrade on 25 March 1934. Among the many recommendations made the most important were as follows:—(1) unification of co-operative legislation; (2) granting to the co-operative societies the greatest possible freedom of the Audit Unions; (3) exemption from all forms of taxation (taxes, rates, etc.), which has much increased latterly.

(To be continued).

G. SEVERIN.

HAIL INSURANCE IN GERMANY

Hail insurance is operated in Germany by two classes of undertakings private companies and public institutions.

The following private companies were in 1932 under the inspection of the National Office for supervision of private insurance (*Reichsaufsichtsamt für Privatversicherung*):

(a) Joint-stock companies:

Berliner Hagel Assekuranz Gesellschaft of 1832, Berlin, with a capital of 3,000,000 Rm.

Kölnische Hagel Versicherungsgesellschaft, Köln, with a capital of 1,800,000 Rm.

Magdeburger Hagelversicherungsgesellschaft, Magdeburg, with a capital of 2,200,000 Rm.

Union-Allgemeine Deutsche Hagelversicherungsgesellschaft, Weimar, with a capital of 3,600,000 Rm.

(b) Large mutual insurance societies (accepting premiums to an amount in excess of 1,000,000 Rm. in 1931:

"*Ceres*" *Hagelversicherungsgesellschaft auf Gegenseitigkeit*, Berlin, with a reserve fund (§ 37 of the Law on the supervision of private insurance companies of 6 June 1931) of 1,124,000 Rm.

Deutsche Hagelversicherungsgesellschaft a. G. für Gärtnereien, Berlin, with a reserve fund of 514,000 Rm.

Norddeutsche Hagelversicherungsgesellschaft a. G., Berlin, with a reserve fund of 2,470,000 Rm.

Landwirtschaftliche Versicherungsgesellschaft a. G., Greifswald, with reserve fund of 2,923,000 Rm.

Gesellschaft zu gegenseitigen Hagelschäden-Vergütung a. G., Leipzig, with a reserve fund of 912,000 Rm.

Mecklenburgische Hagel- und Feuer-Versicherungsgesellschaft a. G., Neubrandenburg, with a reserve fund of 2,073,000 Rm.

Schwedter Hagel und Feuer-Versicherungsgesellschaft a. G., Schwedt, with a reserve fund of 1,617,000 Rm.

(c) Small mutual insurance societies (accepting premiums to an amount not exceeding 1,000,000 Rm. in 1931:

Hagelversicherungsverein a. G. für das nordöstliche Holstein, Neustadt (Holstein).

Hagelversicherungsgesellschaft a. G. für das Land Ratzeburg, Schönberg (Mecklenburg).

Nusser Hagelversicherungsgesellschaft a. G., Nusse b. Lübeck.

Oldenburgische Hagelversicherungsgesellschaft a. G., Oldenburg.

Schleswig-Holstein-Lauenburg. Hagelversicherungsgesellschaft a. G., Kiel.

The sphere of activity of these societies extends beyond the territory of the State (*Land*) in which their main offices are situated (1).

(d) In addition to these societies a few should be noted which are not under inspection by the *Reichsaufsichtsamt für Privatversicherung*, their activity being limited to the province in which their main office is situated. Mention may be made of the *Grevesmühlener Hagelversicherungsverein a. G.*, Schwerin i. M. (for Mecklenburg only), and the *Constantin Hagelversicherungsgesellschaft a. G. für Ostfriesland*, Emden, for Prussia only) (2).

The following public institutions were operating hail insurance in 1932:

Bayerische Landes-Hagelversicherungsanstalt, Munich.

Braunschweigische öffentliche Mobiliarversicherungsanstalt, Brunswick.

Danziger Feuersozietaät, Danzig.

Feuersozietät der Provinz Brandenburg, Berlin.

Feuer Sozietät Grenzmark, Schneidemühl.

Hamburger Feuerkasse, Hamburg.

Land-Feuersozietät der Provinz Sachsen, Magdeburg.

Landschaftliches Brandkasse, Hanover.

Niederschlesische Provinzial-Feuersozietät, Breslau.

Oberschlesische Provinzial-Feuersozietät, Ratibor.

Provinzial Feuerversicherungsanstalt der Rheinprovinz, Düsseldorf.

Eight of these institutions belong to the German Union of Public Hail Insurance (*Öffentlich-rechtlicher Hagelversicherungsverband in Deutschland*), namely: *Feuersozietät der Provinz Brandenburg*, *Feuersozietät Grenzmark*, *Niederschlesische Provinzial-Feuersozietät*, *Oberschlesische Provinzial-Feuersozietät*, *Landfeuersozietät der Provinz Sachsen*, *Landschaftliche Brandkasse Hannover*, *Provinzial-Feuerversicherungsanstalt der Rheinprovinz*, *Danziger Feuersozietaät* (3).

In Germany there is besides a very interesting form of organisation of hail insurance based on an agreement for collaboration between the public authorities and the private insurance business. Reference to this form will be made later.

(1) Statistik für 1932 über die unter Reichsaufsicht stehenden Versicherungsunternehmen und Bausparkassen. Herausg. vom Reichsaufsichtsamt für Privatversicherung, Berlin und Leipzig 1932, p. 139 and 1933, p. 33. Neumanns Jahrbuch der Privatversicherung im Deutschen Reich 1934, p. 561.

(2) Neumann, op. cit. p. XXVI.

(3) Neumann, op. cit. pp. XXVI and 581.

A brief account will now be given of the history alike of private and public hail insurance in Germany, in view of the interest attaching to the different forms of organisation of this branch of insurance in a country where it has been carried to so high a point of development.

I. — PRIVATE INSURANCE.

The first hail insurance society in Germany was the *Braunschweigische-Hagel-Assekuranz a. G.*, founded in 1791 as a mutual insurance society and with a local field of activity. This society was dissolved after a short time and the business done never reached any large figure.

In 1797 another mutual insurance society was founded at Neubrandenburg under the name of the *Hagelschaden-Assekuranz in den Mecklenburgischen Landen*. This society also engaged later in fire insurance business; it still exists to-day under the name of *Mecklenburgische Hagel- und Feuerversicherungsgesellschaft a. G.*

In 1811 there was formed at Kiel the *Hagel-Assekuranz Gesellschaft für die adeligen Güter und Klöster der Herzogtümer Schleswig-Holstein und Lauenburg* which was transformed later into the *Schleswig-Holstein-Lauenburgischer Hagelversicherungsverein a. G.* In 1912 the *Gegenseitiges Hagelassekuranz Gesellschaft für Anhalt* was founded at Köthen. This in 1823 ceased working, resumed activity in 1831 and finally disappeared in 1853. In 1820 the *Halberstädter Hagelschäden-Assekuranz-Gesellschaft* was founded, the operations of which came to an end after three years, the business done having amounted to about 1,000,000 Rm. In 1822 the first joint stock hail insurance company was formed under the trading name of *Berliner-Hagel-Assekuranz-Gesellschaft* with a capital of 1,000,000 thalers.

This company, which was the first to introduce fixed premiums paid in advance with full compensation for losses incurred, soon extended the sphere of its transactions throughout the whole of the States of North Germany. The premiums, fixed at $\frac{1}{2}$ per cent. of the sum insured, proved inadequate and the company was authorised, in 1825, to raise the premium rate to $\frac{3}{4}$ per cent. but, in 1830, following the refusal of the Government to authorise another rise in premiums, it was obliged to go into liquidation. In 1832 this company was revived with a share capital of 300,000 thalers which was soon increased to 500,000 thalers.

In 1824 the *Gesellschaft zu gegenseitiger Högelschädenvergütung* was founded at Leipzig, and in 1826, the *Hagel- und Feuerversicherungsgesellschaft a. G.* at Schwedt as a branch of the Neubrandenburg Society. Both these societies are still in existence.

In 1830 the *Württembergische Hagelversicherungsanstalt a. G.* was founded at Stuttgart. This society confined its activities within the limits of Wurtemberg. The system followed was that of fixed premiums, but with a reduction in compensation in case of insufficiency of funds. On account of the very great risks incurred by the societies operating in this region owing to the heavy falls of hail, together with the inadequacy of the established premiums, this enterprise could only pay compensation in full for one year (1833). In 1842 it received a contribution from the State of 15,000 florins which did not greatly improve the situa-

tion. As in 1853 only 6 per cent. of the claims were paid the company was liquidated towards the end of that year.

The *Badische Landes-Hagelversicherungsanstalt*, founded in 1834 at Freiburg on the model of the preceding society, was dissolved in 1846.

In 1832 two mutual insurance societies were founded in the Duchy of Brunswick and the Kingdom of Hanover which later amalgamated under the name of *Hannover-Braunschweigische Hagelschäden Versicherungsgesellschaft* and remained in existence until 1899.

The *Hagelversicherungs-Verein*, established in Bavaria, was never of great importance and in 1884 was united with the *Bayrische Landes Hagelversicherungsanstalt*.

The *Hagel Assekuranz-Societät*, founded at Lippe-Detmold in 1838, went into liquidation after 30 years.

In 1841, the *Schwedter*, as had occurred with the mother society at Neubrandenburg, established the *Greifswalder Hage- und Feuer-Versicherungsgesellschaft* which is still in existence. At this time the *Deutsche Hagelversicherungs Gesellschaft für Gärtnereien* was founded at Berlin, also several other local companies.

In 1850, the new joint stock company, *Thüringische Hagelschäden Versicherungsgesellschaft*, was founded which, in 1853, amalgamated with the *Union* and, as such, is still existing.

In 1851, the mutual insurance society *Ceres* was founded at Magdeburg and after being transformed into a joint stock company was dissolved in 1857 by the Government, owing to the fact that it had been obliged to utilise nearly half its capital to meet compensation claims, the premiums having proved insufficient. After 1850 a considerable development may be remarked in this branch of insurance, in fact, between 1853 and 1856 four joint stock companies were established, of which the three first are still in existence, the Weimar "*Union*," the *Kölnische*, the *Magdeburger* and the *Vaterländische* of Eberfeld. Owing to the more extended area of the activities of these companies, they were led to consider the preparation of general statistics on hail falls and the losses incurred so as to fix the risk incurred in each district and in consequence the respective rates. The development of joint stock companies may be shown by the business done. In 1854 these companies had insured risks up to 204,000,000 marks; after 10 years this sum had increased to 428,000,000 marks. A similar development does not appear in the transactions of the mutual insurance societies; in fact, while in 1854 they had insured the sum of 208,000,000 marks, at the end of 10 years the capital risks insured amounted to 243,000,000 marks only. The success of the joint stock companies resulted in 1865 in the establishment of a new company of this type: the *Preussische Hagelversicherungs-Aktien-Gesellschaft*, which, after 19 years, was doing business to the amount of 213,000,000 marks.

Sufficient care had not, however, been exercised in the choice of risks and the company had to abandon operations in the course of 1884. Two years later it reappeared again as a mutual insurance society with a far more limited scope. The development of the joint stock companies resulted in an active competition on the part of the mutual insurance societies, which in their turn began to make

progress, in consequence of the general development of agricultural insurance and also owing to the very high premiums which the joint stock companies had begun to apply in consequence of the heavy falls of hail at the end of 1860.

In 1869, the *Norddeutsche Hagelversicherungsgesellschaft* was founded at Berlin. Although a mutual insurance society its activities extended, like those of the joint stock companies, throughout the whole of Germany. This institution which began operations with a total of insured risks amounting to 13,000,000 marks, developed at a pace which outstripped any other society. After two years the sums insured amounted to 79,835,000 marks, in 1880 to 302,127,000 marks, in 1890 to 568,752,000, in 1900 to 748,148,000 and in 1911 to 967,088,000 marks. In 1932, in spite of the crisis, these transactions were represented by a total of 854,475,000 Rm.

The success of the *Norddeutsche* encouraged the establishment of other mutual insurance societies. In 1873 the *Borussia* was founded in Berlin, and in 1874 the *Allgemeine Deutsche Hagelversicherungsgesellschaft*, also in Berlin. The latter was dissolved in 1902. The *Patria*, founded in 1884 in Magdeburg, suffered a like fate and was obliged to go into liquidation in 1904. After the founding of the *Ceres* in 1885, the *Germania* in 1888 and the *Ostdeutscher Hagelversicherungsverband* at Breslau, no other private hail insurance business of any importance was established (1).

In 1931, the *Preussische* and the *Borussia-Ostdeutscher Hagelverband* were absorbed into the *Norddeutsche* (2).

A law on the insurance contract, or policy, was enacted in Germany on 30 May 1908, and came into force on 1 January 1910. This law contains some important provisions limiting the contractual freedom of the parties and is divided into five sections. The first contains provisions applicable to all branches of insurance: general provisions, compulsory declarations, additional risk, premiums, rules affecting insurance brokers. The second section contains the provisions of the law relating to insurance against damage and loss; general provisions, *i. e.*, terms of the policy, alienation of the insured object, third party insurance, fire insurance, hail insurance, live stock insurance, insurance against transport risks and insurance covering liabilities. The third section is devoted to the clauses of the law relating to life insurance. The fourth section contains the clauses on accident insurance, and the fifth the final clauses.

The following are some clauses relating particularly to hail insurance. In respect of hail insurance, the period, prescribed in Art. 5, paragraph 1, during which the insuring party may raise objection to any inaccuracy in the policy, may be reduced to a week (§ 109). The obligation to declare the actual occurrence of the event covered by the insurance is considered as fulfilled when a declaration has been made within four days of the occurrence. The obligation is in fact deemed to have been adequately fulfilled if the declaration is posted within the period indicated. The insurer may not take advantage of the

(1) FRATZSCHER: *Landwirtschaftliche Versicherung*, Berlin 1914 p. 6.

(2) *Die Versicherung* of 21 April 1932 and *Statistik für 1931 des Reichsaufsichtsamt*, p. 141.

clause of an agreement whereby the length of the period, or the way of reckoning it, might be altered to the detriment of the policy holder (§ 110). The policy holder may not, before assessment of the damage and without the authority of the insurer, take steps to change the condition of products damaged by hail, apart from steps that cannot, in the interests of good management, be postponed (§ 111). When, after the occurrence of an event covered by the insurance, a further event takes place within the same insurance period, the insurer is not expected to repair the loss caused by the fresh event beyond the limit of the amount of the insured sum (§ 112). After the occurrence of an event covered by insurance, each party has the right to give notice of termination of the insurance, with effect for the insurer only at the end of the period of the current insurance and for the insured party at latest at that point of time. If the insured party gives such notice for an earlier date, the premium remains none the less as purchased from the insurer for the period of the current insurance (§ 113).

In the case of sale or forced expropriation of insured products of the land, the insurer cannot give notice of termination of the insurance with regard to the purchaser except for the end of the period of insurance in the course of which he becomes cognisant of the sale or other cession. When the transfer of property is not notified at a time convenient to the insurer, the latter is freed from all engagement if the event covered by the insurance occurs after the expiry of the insurance period in the course of which the notification should have been made to him. The insurer however remains bound if he has received notification of the change of ownership soon enough to be able to give notice of the termination of the insurance contract for the end of the insurance period. The insurer may not take advantage of the clause of a convention which deviates from these provisions to the detriment of the purchaser (§ 114). If any one acquires from the fact of a usufruct, a lease or similar agreement, the right to appropriate the insured products of the soil, the provisions relating to sale or forced expropriation are applicable (§ 115).

The provisions of this law do not apply to the laws of the different Federated States (*Länder*) relating to the insurances which are taken out officially, and in virtue of the law, with a public institution set up by the special legislation of the State, nor to insurances effected with an institution of this type in virtue of a legal restraint. Where, in fact, the case is one of insurance contracts effected by public institutions in open competition with other insurance undertakings (for example, hail insurance), it becomes a case of private contracts, and the law referred to applies in full with the single exception that the restrictions on the freedom of agreements and the provisions relating to insurance agents contained in this law are not applicable to the cases in question (1).

On 6 June 1931 the new text was published of the law of 12 May 1901 on the supervision of private insurance business, as modified by various subsequent laws and decrees.

(1) MANES. *Versicherungsllexicon*, op. cit., p. 1113.

This law is divided into ten sections. The first contains preliminary matter. The second deals with permits for operating insurances. The mutual insurance associations form the subject of the third. The fourth deals with the business of the insurance societies, *viz.*, general provisions, preparation of the balance sheet, special provisions relating to the reserves of life insurance companies, and finally provisions relating to priority of claim in the event of insolvency with reference to insurances against loss or damage. The fifth section deals with supervision and the duties and powers of the authorities responsible for supervision, organisation and procedure of the authorities so responsible. Foreign insurance undertakings form the subject of the sixth section. The seventh deals with co-operative savings banks intended to provide or to improve workers' dwellings or small houses (*Siedelungen*) or to liberate members from obligations incurred in this connection. The three last sections contain respectively transitory provisions, penalties and final provisions.

This law does not apply, *inter alia*, to institutions effecting reinsurance only except in the case of mutual insurance societies. The Minister of National Economy is however authorised with the consent of the Reichsrat to order that any such institutions should be brought under this law or under certain provisions contained in this law (§ 148).

Public or official institutions established on the basis of the laws of particular States are not subject to the provisions of this law, but must present to the *Reichsaufsichtsamt* certain statements on the course of their business. These institutions are however subject to the inspection of other Government authorities, in accordance with the provisions contained in the laws under which they have been established and in their own rules.

By the law of 25 June 1910 fire insurance undertakings in Prussia are placed under the supervision of the *Oberpräsident* and that of the Minister of Internal Affairs. According to the statutes of the Union of Public Hail Insurance supervision of the Union is exercised by the Minister of Internal Affairs (1).

The *Reichsaufsichtsamt* and the States' authorities practising supervision are obliged to keep each other informed of the juridical and administrative principles adopted in each case. The same is true in regard to the principles established by the authorities of the Federated States in connection with the supervision of public insurance undertakings (§ 152).

The supervision of any private insurance business the activity of which is limited to a particular State is exercised by the authorities of that State (§ 3). The private insurance societies the activity of which is limited to a particular State are under the supervision of the National Office if the State itself so desires and if the President of the Reich so rules with the consent of the *Reichsrat* (§ 4). Private insurance societies, which operate also outside the territory of the State but the activity of which is limited in respect of the object insured, of the

(1) MANES. op. cit. p. 1113.

territory or of the persons included under the societies, are under the supervision of the authorities of the State in which are their headquarters, if the Minister of National Economy, in agreement with the government of the State in question, so rules (§ 4).

Private Hail Insurance in Germany in 1911.

Name of the Company or Society	Sums assured	Premiums	Claims	Expenses of administration
	M	M	M	M
<i>Joint Stock Companies:</i>				
Berliner H. A. G., Berlin	117,599,000	1,481,829	304,245	298,730
Kölnische H. V. G., Köln a. Rh. . .	236,531,000	2,414,688	754,447	424,346
Magdeburger H. V. G., Magdeburg .	263,891,000	3,103,486	897,757	704,522
"Union", Weimar	188,316,000	2,276,183	577,977	403,298
Vaterländ H. V. G., Elberfeld. . .	147,596,000	1,533,965	386,891	351,308
<i>Mutual Insurance Societies:</i>				
"Borussia", H. V. G., Berlin . .	112,403,000	1,069,033	748,995	314,516
"Ceres", H. V. G., Berlin	106,102,000	906,998	666,785	344,100
Norddeutsche H. V. G., Berlin . .	967,088,000	8,537,522	6,770,833	1,578,519
Preussische H. V. G., Berlin . . .	65,023,000	606,542	402,719	184,710
H. V. G. f. Gärtnereien, Berlin . .	24,848,000	429,239	167,493	102,210
Leipziger H. V. G., Leipzig . . .	105,400,000	980,266	606,099	319,409
Schwedter H. V. G., Schwedt . . .	292,378,000	2,451,273	1,983,360	250,731
Greifswalder H. V. G., Greifsw. . .	105,275,000	955,485	843,552	22,649
Mecklenburgische H. V. G., Neu- brandenburg	108,147,000	711,180	550,211	57,515
Ostdeutscher H. V. V., Breslau . .	101,181,000	1,375,857	1,242,166	70,654

The latest law amending the law of 1901, and enacted before the publication of the new text of the law on the supervision of the private insurance societies, was that of 30 March 1931. One of the principal reforms of this law consisted in the organisation of an audit, carried out by an auditor, of the settlement of accounts, of the book-keeping and of the annual report. These can be approved by the Council of the society only after such audit has been carried out. Detailed instructions are given as to the selection, the qualifications and the work of the auditors, of a similar character to the provisions of the new law on joint-stock companies, and all directed towards ensuring that the audit is seriously carried out and will not degenerate into pure formality. In addition it is made obligatory to appoint a trustee who will take charge of the reserve fund of the premiums. The trustee is appointed by the supervisory council, or if no such council exists, then by the Administrative Council of the society. The external supervising authority may place a veto on the choice and may appoint the trustee, if not satisfied with the candidate proposed. The fund must be invested and safeguarded so as to prevent the use of it by the society without the consent of the trustee. He is empowered to check the books and written entries and

certifies on the balance sheet that the reserves therein shown are duly invested and safeguarded (1).

Private Hail Insurance in 1932.

Name of the Company or Society	Policies	Insured sums	Premiums	Claims paid
<i>Joint Stock Companies:</i>		(thousands of Rm.)		
Berliner Hagel Assek. G. v. 1832, Berlin	24,506	149,980	1,818	743
Kölnische Hagel V. G., Köln a/Rh. Magdeburger Hagel V. G., Magde- burg	17,406	167,124	1,869	615
Union Allg. Deutsche Hagel V. G., Weimar	31,914	160,527	1,879	788
	12,280	173,375	1,871	853
<i>Mutual Insurance Societies:</i>				
"Ceres" Hagel V. G., Berlin . .	28,307	89,731	1,811	825
Deutsche Hagel V. G. f. Gärtner- eien, Berlin	15,719	68,743	1,250	774
Norddeutsche Hagel V. G., Berlin. Landwirtschaftliche V. G., Greifs- wald	219,032	854,475	14,056	8,460
Gesellsch. z. gegens. Hagelschäden- vergütung, Leipzig	9,007	143,572	974	674
Mecklenb. Hagel-u. F. V. G., Neu- brandenburg	23,596	114,394	1,855	1,806
Schwedter Hagel- u. F. V. G., Schwedt	3,861	125,879	1,147	918
	12,961	248,432	3,981	3,175

The two tables here shown contain the main statistical data relating to hail insurance operations effected by the German private insurance undertakings coming under the National Office of Supervision of Private Insurance (*Reichsaufsichtsamt*), during 1911 (2) and 1932 (3). Sums received by the five small mutual insurance societies amount to 178,180 Rm. (4). Although it would have been possible to publish more recent statistics on the hail insurance institutions of Germany, the year 1932 has been chosen because for that year detailed statistics relating to the public or official hail insurance institutions are also available.

Accordingly there will be available for 1932 the elements required for obtaining a complete general view and for establishing comparisons between the different forms under which hail insurance is operated in Germany.

(To be continued).

F. ARCOLEO.

(1) *Annuaire de législation étrangère publiée par la société de législation comparée*. Paris 1932, p. 90.

(2) A. FRATZSCHER, *op. cit.* p. 14.

(3) *Statistik für 1932 des Reichsaufsichtsamt für Privatversicherung* 1933, p. 139.

(4) *Statistik für 1933 des Reichsaufsichtsamt*, p. 33.

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MOESSNER K. E. Dr.: Das Deutsche Bodenkreditsystem. Carl HEYMANS Verlag, Berlin, 1934, pp. XV + 420, 14 RM.

[This work, which appeared towards the end of 1934, is the first volume of a scientific series on German land mortgage credit. It is the intention of Prof. W. Kalveram, Frankfurt a. M., who has undertaken the preparation of the series and who is the writer of the preface to Dr. Moessner's book, to bring to the practical functioning of land mortgage credit all the assistance which may result from a close connection with the scientific theory. The difficulty of this undertaking is clearly seen from the fact that two similar attempts, made by F. Hecht in 1929 with the inauguration of the "Jahrbücher des europäischen Bodenkredits" and by F. Schulte in 1928 with the publication of the "Jahrbuch für Bodenkredit," were very speedily abandoned.

In defining the scope of the new series of publications regarding land mortgage credit, Prof. Kalveram points out that the corporative structure of the German organisation of land mortgage credit within the frame of the national economy is a subject for scientific study of especial interest at the present time; side by side with this question, there are other questions of no less importance and in the foreground of interest such as debt conversion or debt clearance in respect of agricultural property, the effect to be given to the schemes of land settlement, the problem of the second mortgage, encouragement of the homestead and workers' dwellings system, the sanitation of the old quarters of towns, etc. The several studies, taking as basis the existing literature on the subject, should render accessible all the material dispersed throughout Germany and other countries.

The treatment in Dr. Moessner's book covers the basic conceptions, the theoretical system, the practical problems and the organisation of land mortgage credit in Germany as a form of banking. Part I, dealing with the conception on which German land credit is based, and Part II, in which the author deals with the theoretical system of the banking organisation of land mortgage credit, are in each case of comparatively limited extent. Since the theoretical foundations of the land mortgage credit system are still far from complete, the particulars given in these two parts are the more acceptable: they are at once important and indispensable for the discussion in Part III of the practical problems of land mortgage credit as a form of banking, and the presentation in Part IV of the structural organisation of German land mortgage credit.

In Part I the author, after describing the many contradictory basic views on credit economy, endeavours to outline the function of credit in modern trading economy and to disengage the idea of land mortgage credit from the general notion of credit.

In Part II the theoretical system of land mortgage credit as a form of banking is examined in the first place from the point of view of the granting of mortgage loans and afterwards from that of financing; the author discusses, lastly, the establishment of a balance between the granting of loans and the issue of bonds.

In Part III the author handles the practical problems of land mortgage credit as a form of banking in the first place in relation to agriculture, then with reference to housing and finally with respect to the mortgage bond market.

Part IV, the subject of which is the structural organisation of German land mortgage credit, contains comprehensive details on the *Landschaften*, *Stadtschaften* and mortgage banks, and finally in an appendix, a short note on other institutions issuing bonds.

Space does not permit of a more precise account of the last two parts of this volume, which are full of historical and statistical detail. In technical circles the description to be found there of an economic evolution in the course of which there have been many critical moments, will attract general interest, as will also the book as a whole.

It may be noted that the chapter on German agriculture in Part III contains in the first place a short historical retrospect on land mortgage indebtedness in prewar years. Then a description is given of the effects of war and inflation abruptly breaking the normal course of economic development, followed by an account of the credit position of agriculture after the stabilisation of the currency, the extent of the indebtedness according to size categories of farms and according to regions, as well as of the application of the credits arranged. Particulars are added of the economic bases of agricultural earning capacity since the stabilisation, of State measures of relief, of land settlement as a means of working bankrupt farms and, lastly, of the evolution that has taken place in the agricultural property market. In the summary of this chapter the author indicates the independent liability of a banking organisation, such as is represented by the *Land-schaften*, *Stadtschaften* and the mortgage banks, as the best means for guaranteeing a guidance of credits in the direction of an appropriate balance between the interests of the mortgage bond capital and landed property. A misuse of liberty could be prevented by strong legislative measures, such as have long existed in Germany in the sphere of land mortgage credit. In the view of the author land mortgage credit might make a closer approach to personal credit, whatever importance may be attached to the definitely real security afforded. In this event the personality of the farmer would become a still more important factor than ever before in the granting of land mortgage credit].

E. P.

HERBERT DAY LAMSON: *Social Pathology in China*. The Commercial Press, Limited, Shanghai, China, 1935, p. 607.

[The author, a Professor of Sociology in the University of Shanghai and an internationally known authority on Chinese affairs and problems, presents a thorough picture of social conditions in China. Poverty and pauperism, the standard of living, wages and income, rural problems, urban industrial problems, housing, illiteracy and ignorance, population are dealt with in the first part of the volume. Part II discusses the problems of health devoting particular attention to forms of illness prevalent in the country: such as leprosy, tuberculosis, venereal diseases and mental deficiencies. Attempts at remedying existing conditions on the part of the Chinese themselves and of religious and missionary agencies are also dealt with in this part. Part III is entirely devoted to the family and its problems: marriage, divorce, desertion, the size of the family itself, infanticide, abortion, child and woman slavery, widowhood.

The author discusses his matter with the utmost frankness, generally backing both statements and suggestions for remedies to the existing evils with statements by leading Chinese authorities. Each chapter is followed by a number of questions for class discussion, as the whole work is intended to serve as a text book for the students of sociology of Chinese Universities. A general conclusion and an index complete this work which will be found extremely interesting by the sociologist and the layman who wishes to become acquainted with China as it is to day and of its efforts to prepare for itself a better and healthier to-morrow].

V. F.

G. LUGLI - G. FILIBECK: *Il porto di Roma Imperiale e l'Agro portuense*. Bergamo, Officine dell'Istituto Italiano d'Arti Grafiche, 1935-XIII, pp. 277, 132 illustrations, 16 tables, 4 maps.

[This publication presents a comprehensive account, with numerous illustrations, plans, etc., of the work of land reclamation of the estate of Porto in the Roman Campagna, which is considered to be one of the most dangerous centres of malarial infec-

tion. The lagoon which was formerly Trajan's harbour was recognised as being the principal source of infection, and the reclamation of this area was felt to be an essential condition for the hygienic, economic and social redemption of the region.

After some account of the work of drainage of this lagoon, the writers proceed to the subject of the agricultural improvement scheme undertaken by a consortium for the land and agricultural improvement of the zone. The first step was the construction of a network of roads extending to 80 kilometres in all, and of a large number of farm workers' dwellings and farm buildings. Two large centres specially designed for milk production were planned, and attention was given to the pasturage which was equipped with suitable shelters for herdsmen and herds alike. The settlement of the estate was effected by means of the formation of agricultural centres varying from a minimum area of 20 to a maximum of 100 hectares. All live stock, which have increased in numbers and are carefully selected, are kept in stalls. A machine depot ensures the regular working of the modern machines with which the estate is equipped. The farm agreement in force is that of share tenancy, or *mezzadria*.]

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(1) Previous list March 1934. To be continued September 1935.

(2) List of abbreviations: bihebd (biweekly); bimens. (twice monthly); bimestr. (every two months); déc. (every ten days); étr. (foreign price); f. (copy); heb. (weekly); int. (home price); irr. (irregular); mens. (monthly); n°. (number); N. S. (new series); p. a. (per annum); q. (daily); sem. (half yearly); s. (series); trihebd. (every three weeks); v. (volume); trim. (quarterly).

(3) Between brackets [/] are given translations and explanatory notes not appearing in the title of the review.

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AGRICULTURAL STATISTICS

MONTHLY CROP REPORT AND AGRICULTURAL STATISTICS

The following explanations refer to crop conditions quoted in the crop notes and in the tables. — Crop condition according to the system of the country: Germany, Austria, Hungary, Luxemburg and Czechoslovakia: 1 = excellent, 2 = good, 3 = average, 4 = bad, 5 = very bad; France: 100 = excellent, 70 = good, 60 = fairly good, 50 = average, 30 = bad; Lithuania, Poland, Sweden and Switzerland: 5 = excellent, 4 = good, 3 = average, 2 = bad, 1 = very bad; Netherlands: 90 = excellent, 70 = good, 60 = fairly good, 50 = below average; U. S. S. R.: 5 = good, 4 = above the average, 3 = average, 2 = below average, 1 = bad; Canada: 100 = crop condition promising a yield equivalent to the average yield of a long series of years. United States: 100 = crop condition which promises a normal yield; Egypt: 100 = from June 1934, crop condition which promises a yield equal to the average yield of the last five years. — For other countries the system of the Institute is employed: 100 = crop condition which promises a yield equal to the average of the last ten years.

CEREALS

The data on the 1934 cereal crops that reached the Institute in January involve only negligible modifications for in any case a very few countries in the previous estimates. In Europe a small increase for wheat in the Irish Free State and a slight decrease in Romania are reported. In North America the final estimate for Canada, published in the last few days, practically confirmed the November figure, bringing only a very small increase; as at the same time the estimate of 1933 production was revised from 270 million to 282 million bushels, the 1934 crop, instead of being somewhat larger than that of 1933, now appears to be slightly smaller. Of the countries of the southern hemisphere Uruguay has communicated its first crop estimate, which is one-third below that of last year but sufficient to cover internal requirements; the revised estimate for the Union of South Africa confirms in essentials the very good expectations previously formulated and makes it apparent that the crop will be sufficient to meet internal requirements.

The two great producing countries of the southern hemisphere have not yet revised their first estimates. Argentina telegraphed to the Institute on 26 January that threshings in Buenos Aires province, where almost half of the wheat crop is cultivated, indicate a yield below expectations and that the general results are not satisfactory either in quality or quantity. In Australia the harvest was delayed by bad weather in New South Wales and by low temperatures in Western Australia; conditions in South Australia and Victoria were practically normal. The early summer was abnormally cold and wet.

The new estimates and revisions reported do not involve any change in the 1934 totals of the individual continents as calculated a month ago; on the other hand the 1933 totals have been revised.

TABLE I. — *World Wheat Production (1)*

(Million bushels).

Years	Europe			North America	South America	Asia	Africa	Oceania	Total	U.S.S.R.
	Importing countries	Exporting countries	Total							
Average 1923-27 . . .	920	323	1,243	1,210	275	402	180	143	3,381	676
1928	977	433	1,409	1,491	399	342	116	168	3,925	807
1929	1,071	378	1,449	1,139	221	384	136	134	3,463	694
1930	915	445	1,360	1,322	273	459	115	221	3,750	989
1931	974	462	1,435	1,270	264	407	131	197	3,704	753
1932	1,212	280	1,492	1,197	286	393	140	224	3,732	744
1933	1,292	455	1,747	823	347	420	121	185	3,643	1,019
1934 (preliminary) . .	1,188	322	1,510	782	310	423	140	145	3,310	...

1) Not including China, Persia, Turkey and Iraq.

World wheat exports were not large in November, the total only slightly surpassing that of November 1933. In the first four months of the season exports scarcely attained 184 million bushels, thus showing an increase of only 1 million bushels on the corresponding total of 1933. Our forecast in October of a world export of 610 million bushels for the whole season, a forecast that assumed an increase of 64 millions on the previous season appears therefore too large, judging from the results obtained in the first months; in the coming months, however, more active demand is to be expected so that even if there are grounds for lowering the estimate of probable requirements the reduction will probably be small.

TABLE II. — *World net exports of wheat (including flour in terms of wheat)*

(Million bushels)

Months	1934-35	1933-34	1932-33	1931-32	1930-31	1929-30
August	51	45	41	66	77	71
September	41	51	48	78	74	57
October	50	46	62	74	84	60
November	42	41	54	67	77	51
December	—	51	60	64	59	50
January	—	48	62	62	54	48
February	—	44	64	73	70	45
March	—	50	64	74	67	50
April	—	35	40	70	62	42
May	—	44	52	67	81	50
June	—	45	42	59	67	51
July	—	46	44	45	52	53
Total Season . . . 1)	610	546	633	799	824	628
Total August-November . . .	184	183	205	285	312	239
Percentage of total season . .	30 %	33 %	32 %	35 %	38 %	38 %

1) Forecast October 1934.

The absence of recovery in the international trade is due especially to the smallness of demand in European countries; shipments to extra-European countries continue on the other hand at a level higher than in the past season. European imports in the first four months of the season do, in fact, as indicated in the following table, show a decrease of 13 million bushels with respect to the same period last year.

TABLE III. — *Net imports of wheat into Europe (including flour in terms of wheat).*
(Million bushels)

Months	Season 1934-35			Season 1933-34		
	United Kingdom and Irish Free State	Other European countries	Total Europe	United Kingdom and Irish Free State	Other European Countries	Total Europe
August	18	14	32	19	15	34
September	20	16	36	22	13	35
October	18	13	31	23	14	37
November	17	12	29	22	13	35
December	—	—	—	18	9	27
January	—	—	—	14	10	24
February	—	—	—	16	11	27
March	—	—	—	22	15	37
April	—	—	—	21	13	34
May	—	—	—	20	14	34
June	—	—	—	19	14	33
July	—	—	—	21	14	35
Total August-November . . .	73	55	128	86	55	141
Total season . . . 1)	230	200	430	237	155	392

1) Forecast October 1934.

The decrease appears especially in the case of Great Britain and Northern Ireland, since the Continent remains practically stationary at the very low level of last season. It seems probable that demand will be more active in the coming months as internal supplies in the various countries are absorbed by consumption.

A summary may be added of the information received by the Institute on the crops in the ground for harvest in 1935.

Estimates of winter wheat sowings are known only for a limited number of countries and it is, therefore, impossible to draw general conclusions. It may be pointed out, however, that the majority of the European countries which have up to the present communicated estimates indicate increases in the wheat area compared with last year. These increases are: Bulgaria 1 %, France and Greece 2 %, Great Britain 4 %, Lithuania and Czechoslovakia 5 %, Finland 10 % and Romania 15 %. Latvia, recording a decrease of 1 %, is the only exception. The general impression made by these partial statistics is that there will not be a very appreciable change in the extent of wheat sowings for the whole of Europe as compared with last year. It seems probable, however, that there will be a slight increase rather than a decrease, particularly in view of the very favourable

weather conditions experienced in the greater part of Europe during the autumn and at the beginning of the winter.

The estimate of winter sowings in the United States shows an increase on last year of 6 %. The official commentary accompanying this estimate, which is reproduced on another page, anticipates that the proportion of these sowings which will yield no crop will this year again be above the average.

Area sown to winter cereals, in thousand acres.

(The years indicated are those of the harvest)

COUNTRIES	WHEAT			RYE			BARLEY			OATS		
	1935	% 1935		1935	% 1935		1935	% 1935		1935	% 1935	
		1934 = 100	1929 to 1933 = 100		1934 = 100	1929 to 1933 = 100		1934 = 100	1929 to 1933 = 100		1934 = 100	1929 to 1933 = 100
Bulgaria . . .	3,096	101.3	104.5	465	105.7	86.7	441	98.2	95.3	—	—	—
Finland . . .	56	109.8	181.4	628	103.6	118.0	—	—	—	—	—	—
France 1) . . .	13,007	101.9	104.3	1,607	96.8	86.3	449	91.0	103.5	2,138	105.7	99.1
Greece . . .	2,020	101.7	137.6	—	—	—	—	—	—	—	—	—
Latvia . . .	207	99.0	142.3	647	99.0	106.5	—	—	—	—	—	—
Lithuania . . .	425	105.5	115.1	1,260	103.6	105.2	—	—	—	—	—	—
Romania . . .	7,858	115.1	113.9	951	107.4	109.1	227	114.0	98.3	—	—	—
Czechoslovakia.	2,212	105.4	111.0	2,428	100.6	96.0	12	104.4	71.4	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—
Canada . . .	663	95.0	90.8	631	92.8	87.9	—	—	—	—	—	—
United States .	44,306	105.9	101.1	5,697	113.3	112.9	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—
India 2) . . .	33,158	96.7	107.0	—	—	—	—	—	—	—	—	—
Punjab 2) . . .	9,709	91.2	93.1	—	—	—	—	—	—	—	—	—

1) Sowings at 1 January 1935. — 2) First estimate.

The area cultivated to wheat in the Punjab reveals a decrease of 9 % from that of last year, weather conditions having been unfavourable to sowings.

No appreciable change, on the whole, in the wheat area appears to have taken place in North Africa.

The first stage of vegetation was generally very satisfactory in nearly all European countries and in the U. S. S. R. though in some places there were complaints of excessive wetness and a too rapid growth of the sowings following the abnormally mild weather. There was no snow in the majority of regions at the beginning of the year. In the second decade of January there was intense cold, accompanied or followed by heavy snowfalls. It is likely that some loss will have been caused by the frosts, but up to the present it appears to be slight and it will be offset by the advantage following the cessation of too rapid growth.

Crop condition in the United States is not satisfactory on the whole, owing to the drought which has prevailed in recent months in a considerable proportion of the winter wheat belt.

In India, the monsoon rains were slight and the outlook for the crop is not as good as it was a year ago.

G. CAPONE.

Germany: The quality of the 1934 crops of the four chief cereals (wheat, rye, barley, and oats) was inferior to that of the preceding year. It may, however, be considered fairly good, as the following table shows.

Quality of the principal cereals.

Year of harvest	Production		Quality		
			Good	Average	Below average
			Expressed as percentages of the production of each variety		
	thousand centals	thousand bushels	%	%	%
<i>Winter wheat.</i>					
1934	87,021	145,031	62.5	25.4	12.1
1933	108,625	181,038	67.2	24.5	8.3
1932	96,035	160,056	55.3	29.6	15.1
1931	80,886	134,808	42.5	34.8	22.7
<i>Winter rye</i>					
1934	165,845	296,153	59.3	27.7	13.0
1933	190,379	339,963	64.9	26.7	8.4
1932	182,341	325,609	58.8	30.1	11.1
1931	145,320	259,501	50.1	33.9	16.0
<i>Spring barley.</i>					
1934	55,399	115,416	59.6	27.3	13.1
1933	60,739	126,541	59.7	29.1	11.2
1932	57,105	118,971	48.6	34.4	17.0
1931	55,369	115,354	40.1	36.7	23.2
<i>Oats.</i>					
1934	120,204	375,634	51.9	29.7	18.4
1933	153,277	478,986	64.0	26.9	9.1
1932	146,613	458,163	55.5	30.7	13.8
1931	136,795	427,482	37.3	36.0	26.7

According to the final estimate, production of mixed grains is 25,686,000 bushels (14,898,000 centals) against 27,216,000 (15,785,000) in 1933 and an average in the years 1928 to 1932 of 23,864,000 (13,841,000), (94.4 % and 107.6 %). Production of buckwheat is 196,700 centals against 266,100 in 1933 and an average of 355,800 in the years 1928 to 1932 (73.9 and 55.3).

Austria: Mild weather prevailed throughout December. Much rain was recorded in the Southern Alps in the middle of the month but rainfall in the Northern Alps was inadequate. There was snow only on heights above 3,000-5,000 feet.

The development of winter cereals is abnormal. Field mice in considerable numbers are in evidence in several places. No frost damage was recorded officially up to the beginning of January.

Crop conditions of winter cereals on 1 January was as follows: wheat, 1.9 (against 2.1 on 1 December and 2.3 on 1 January last year); rye 1.6 (1.9, 2.2), and barley, 2.1 (2.0, 2.7).

Belgium: Weather in December was mild and wet. The last autumn work was carried out in very good conditions. Winter cereals are growing vigorously.

Wheat.

COUNTRIES	†) AREA					†) PRODUCTION									
	1934	1933	Average to 1932	% 1934 1934/35	Aver. 1933/1934 = 100	1934	1933	Average to 1932	1934	1933	Average to 1932	% 1934 1934/35	Aver. 1933/1934 = 100		
	1934/35	1933/34	1928/29 to 1932/33	1933/34		1934/35	1933/34	1928/29 to 1932/33	1934/35	1933/34	1928/29 to 1932/33	1933/34			
	1,000 acres					1,000 centals					1,000 bushels				
Germany	5,431	5,727	4,723	94.8	115.0	99,926	123,554	89,191	166,539	205,918	148,649	80.9	112.0		
Austria	568	543	518	104.7	109.8	7,943	8,769	7,162	13,239	14,615	11,937	90.6	110.9		
Belgium	385	372	389	103.5	99.2	8,593	9,040	8,744	14,322	15,067	14,574	95.1	98.3		
Bulgaria	3,089	3,097	2,931	99.7	105.4	24,947	33,273	30,195	41,577	55,453	50,324	75.0	82.6		
Denmark	282	261	253	108.2	111.5	7,496	6,926	6,630	12,493	11,543	11,050	108.2	113.1		
Spain	11,101	11,047	10,964	100.5	101.2	104,162	82,942	89,068	173,600	138,234	148,443	125.6	116.9		
Estonia	161	155	94	103.4	170.8	1,852	1,470	931	3,086	2,451	1,551	125.9	199.0		
Irish Free State .	94	50	26	185.8	363.9	2,282	1,190	609	3,803	1,983	1,014	191.8	375.0		
Finland	104	91	44	113.9	237.6	1,567	1,476	628	2,612	2,460	1,046	106.2	249.7		
France	13,109	13,503	13,168	97.1	99.6	198,417	217,401	173,316	330,688	362,328	288,854	91.3	114.5		
Engl. and Wales .	1,759	1,660	1,311	106.0	134.1	39,155	35,258	25,420	65,259	58,763	42,363	111.1	154.0		
Scotland	98	78	53	124.5	184.2	2,486	2,083	1,277	4,144	3,472	2,128	119.4	194.7		
Northern Ireland	9	6	4	140.9	224.6	218	136	87	363	227	145	160.0	251.1		
Greece	2) 1,951	3) 1,712	3) 1,391	99.9	98.8	18,816	17,031	7,503	31,359	28,385	12,505	110.5	250.8		
Hungary	3,921	3,924	3,969	99.9	98.8	36,869	57,815	47,466	61,447	96,356	79,109	63.8	77.7		
Italy	12,236	12,361	12,009	97.4	101.9	139,614	178,794	146,418	232,686	297,985	244,024	78.1	95.4		
Latvia	351	309	192	113.6	183.1	4,831	4,035	2,109	8,051	6,725	3,515	119.7	229.0		
Lithuania	514	499	479	103.0	107.3	5,944	4,915	5,094	9,907	8,192	8,490	120.9	116.7		
Luxemburg	40	34	27	118.0	145.8	636	597	307	1,061	995	511	106.6	207.5		
Malta	9	10	9	97.0	101.0	186	183	176	310	305	293	101.9	106.1		
Norway	46	28	29	165.1	160.1	701	453	433	1,168	755	722	154.7	161.7		
Netherlands . . .	359	338	178	106.2	201.2	10,318	9,195	4,614	17,196	15,325	7,689	112.2	223.6		
Poland	4,385	4,187	3,908	104.7	112.2	38,081	47,931	40,812	63,467	79,883	68,018	79.5	93.3		
Portugal	1,424	1,203	1,203	99.9	100.4	12,292	9,044	8,302	20,486	15,073	13,837	135.9	148.1		
Romania	7,610	7,701	7,579	98.8	100.4	45,951	71,444	64,429	76,551	119,071	107,380	64.3	71.3		
Sweden	742	799	642	92.8	115.5	17,747	17,522	12,203	29,578	29,203	20,339	101.3	145.4		
Switzerland 4) . .	211	186	178	113.9	118.9	4,007	3,974	3,300	6,677	6,623	5,500	100.8	121.4		
Czechoslovakia 5)	2,301	2,272	1,993	101.3	115.4	30,609	43,753	30,008	50,013	72,921	50,013	68.6	100.0		
Yugoslavia	5,002	5,257	5,214	95.1	95.9	40,998	57,950	51,703	68,328	96,581	86,170	70.7	79.3		
Total Europe . . .	77,292	77,831	73,478	99.5	105.4	906,024	1,048,154	858,135	1,510,010	1,746,892	1,430,185	86.4	105.6		
U. S. S. R. (w) (s)	29,785	26,688	22,734	111.6	131.0	...	257,942	171,741	...	429,894	286,229	...	...
U. S. . . . .	...	55,352	57,725	...	...	...	353,402	306,752	...	588,992	511,243	...	...
Canada	23,985	25,991	25,331	92.3	93.9	165,509	169,135	246,756	275,849	281,892	411,261	97.9	67.1		
United States (w) (s)	32,945	28,485	39,466	115.7	83.5	243,020	210,475	370,602	405,034	350,792	617,670	115.5	65.6		
Mexico	9,290	19,425	20,437	47.8	45.5	54,861	106,910	145,535	91,435	178,183	242,558	51.3	37.7		
Total North Amer.	1,179	1,173	1,279	100.5	92.2	6,063	7,273	7,163	10,104	12,121	11,939	83.4	84.6		
Chosen	67,399	75,074	86,713	89.8	77.7	469,453	493,793	770,056	782,422	822,988	1,283,528	95.1	61.0		
India	789	790	846	99.9	93.3	5,595	5,332	5,138	9,324	8,887	8,563	104.9	108.9		
Japan	36,062	32,970	32,356	109.4	111.5	209,619	211,658	204,019	349,365	352,763	340,032	99.0	102.7		
Syria and Leb. . .	1,589	1,509	1,219	105.3	130.4	27,346	24,226	18,369	45,577	40,376	30,614	112.9	148.9		
Turkey	1,175	1,212	1,148	97.0	102.3	8,724	8,086	8,042	14,540	13,476	13,403	107.9	108.5		
Total Asia	6,871	7,257	7,357	94.7	93.4	53,129	59,783	51,485	88,546	99,636	85,806	88.9	103.2		
Algeria 6)	46,486	43,738	42,926	106.3	108.3	304,413	309,085	287,053	507,352	515,138	478,418	98.5	106.0		
Cyrenaica	4,007	3,993	3,771	100.3	106.2	23,843	19,199	18,117	39,738	31,998	30,195	124.2	131.6		
Egypt	22	13	20	165.1	110.1	107	19	52	179	31	6	568.4	207.9		
Eritrea	1,442	1,426	1,628	101.1	88.6	22,366	23,971	26,513	37,276	39,951	44,187	93.3	84.4		
Kenya	11	9	17	128.6	64.3	88	66	24	147	110	40	133.3	366.3		
French Morocco .	43	35	58	121.9	74.0	392	291	347	653	485	578	134.5	113.0		
Tunisia	2,842	3,209	2,776	88.6	102.4	18,739	17,342	16,268	31,232	28,902	27,113	108.1	115.2		
Total North Africa	1,903	1,754	2,005	108.5	94.9	9,590	5,512	8,139	15,983	9,186	13,566	174.0	117.8		
Argentina	10,270	10,439	10,275	98.3	99.9	75,125	66,400	69,460	125,208	110,663	115,766	113.1	108.2		
Chile	2) 18,484	2) 19,663	2) 20,325	94.0	90.9	151,238	171,675	144,542	252,058	286,119	240,898	88.1	104.6		
Uruguay	3) 17,199	3) 18,041	3) 18,336	95.3	93.8	...	21,185	16,120	...	35,307	26,865	...	...
Union of South Afr.	2,264	2,104	1,606	107.6	140.9	...	6,769	8,804	5,940	11,281	14,674	9,899	76.9	114.0	
Australia	997	1,189	1,034	83.9	96.4	...	...	...	...	...	...	...	...
New Zealand 7) .	1,523	1,257	1,288	121.1	118.2	8,370	6,136	6,180	13,950	10,227	10,300	136.4	135.4		
GRAND TOTALS .	12,965	15,080	15,698	86.0	82.6	82,200	105,222	108,564	137,000	175,370	180,940	78.1	75.7		
	229	295	267	77.6	85.8	...	...	...	...	...	...	...	...
	234,131	242,649	249,748	96.6	93.8	2,003,592	2,209,269	2,249,930	3,339,281	3,682,071	3,749,834	90.7	89.1		

Rye.

COUNTRIES	†) AREA					†) PRODUCTION							
	1934	1933	Average	% 1934		1934	1933	Average	1934	1933	Average	% 1934	
	1934/35	1933/34	1928 to 1932	1934/35		1934/35	1933/34	1928 to 1932	1934/35	1933/34	1928 to 1932	1934/35	
			1928/29 to 1932/33	1933/1934	Aver.			1928/29 to 1932/33			1928/29 to 1932/33	1933/1934	Aver.
	1,000 acres					1,000 centals				1,000 bushels			
Germany	11,097	11,180	11,312	99.3	98.1	167,720	192,402	173,724	299,501	343,576	310,223	87.2	96.5
Austria	949	958	936	99.1	101.4	13,382	15,145	11,627	23,897	27,045	20,762	88.4	115.1
Belgium	544	578	565	94.2	96.3	11,649	12,493	12,106	20,802	22,310	21,618	93.2	96.2
Bulgaria	476	516	565	92.3	84.2	3,682	5,422	5,343	6,576	9,683	9,542	67.9	68.9
Denmark	375	353	348	106.0	107.7	6,173	5,543	5,293	11,023	9,899	9,452	111.4	116.6
Spain	1,451	1,458	1,528	99.5	95.0	12,419	11,593	12,083	22,176	20,703	21,577	107.1	102.8
Estonia	364	373	354	97.4	102.6	4,910	4,892	3,706	8,768	8,735	6,618	100.4	132.5
Irish Free State .	2	3	4	71.6	55.9	37	48	67	67	86	120	77.0	55.5
Finland	605	575	527	105.4	115.0	8,704	8,194	6,727	15,543	14,633	12,013	106.2	129.4
France	1,670	1,706	1,815	97.9	92.0	18,280	19,789	18,181	32,643	35,338	32,466	92.4	100.5
Greece	204 ³⁾	183 ³⁾	152	—	—	1,926	1,568	985	3,440	2,800	1,760	122.9	195.5
Hungary	1,632	1,677	1,576	97.3	103.5	11,311	21,087	16,172	20,197	37,655	28,878	53.6	69.9
Italy	278	282	302	98.4	91.9	3,140	3,774	3,629	5,607	6,739	6,481	83.2	86.5
Latvia	663	637	610	104.0	108.7	9,078	7,828	5,572	16,210	13,979	9,949	116.0	162.9
Lithuania . . .	1,224	1,210	1,184	101.2	103.3	14,124	12,170	11,852	25,221	21,731	21,165	116.1	119.2
Luxemburg . . .	19	21	18	94.6	107.4	295	322	233	527	575	416	91.5	126.6
Norway	15	16	17	92.4	83.1	234	245	279	418	438	498	95.5	84.0
Netherlands . .	450	408	460	110.2	97.7	9,123	8,737	8,798	16,291	15,602	15,711	104.4	103.7
Poland	14,014	14,271	14,061	98.2	99.7	124,747	155,940	140,616	222,764	278,465	251,101	80.0	88.7
Portugal . . . .	...	409	400	...	...	2,689	2,024	2,613	4,802	3,615	4,665	132.8	102.9
Romania	912	958	868	95.2	105.1	4,652	9,831	7,561	8,307	17,555	13,502	47.3	61.5
Sweden	575	546	588	105.3	97.8	11,685	10,152	8,822	20,865	18,128	15,753	115.1	132.5
Switzerland . .	35	46	47	76.4	74.0	695	865	854	1,242	1,545	1,525	80.4	81.4
Czechoslovakia .	2,442	2,584	2,606	94.5	93.7	33,583	45,978	39,525	59,969	82,104	70,580	73.0	85.0
Yugoslavia . . .	613	640	594	95.7	103.1	4,305	5,409	4,431	7,688	9,659	7,912	79.6	97.2
Total Europe . .	41,018 ⁵⁾	41,588	41,437	98.6	99.0	478,544	561,451	500,799	854,548	1,002,596	894,287	85.2	95.6
*U.S.S.R. . . (w)	60,318	61,777	64,644	97.6	93.3	...	526,466	464,868	...	940,120	830,124	...	...
— (s)	...	988	1,137	...	...	...	6,614	8,069	...	11,811	14,409	...	...
Canada	735	583	966	126.1	76.1	3,037	2,339	7,122	5,423	4,177	12,718	129.8	42.6
United States . .	1,937	2,349	3,296	82.5	58.8	8,982	11,844	21,647	16,040	21,150	38,655	75.8	41.5
Total North Amer.	2,672	2,932	4,262	91.1	62.7	12,019	14,183	28,769	21,463	25,327	51,373	84.7	41.8
Turkey	1,204	696	677	172.9	177.8	6,815	7,521	6,003	12,169	13,430	10,719	90.6	113.5
Algeria 6) . . .	3	3	4	113.8	94.6	24	16	26	43	29	47	150.4	92.1
Argentina	(2) 1,903 (2)	1,767 (2)	1,378 (2)	107.7	138.1	9,921	5,225	4,463	17,716	9,330	7,970	189.9	222.3
	(3) 1,458 (3)	904 (3)	811 (3)	161.2	179.7								
GRAND TOTALS .	46,355 ⁵⁾	46, 23	47,191	100.5	98.2	507,323	588,396	540,060	905,939	1,050,712	964,396	86.2	93.9

Barley.

COUNTRIES	†) AREA					†) PRODUCTION							
	1934	1933	Average	% 1934		1934	1933	Average	1934	1933	Average	% 1934	
	—	—	1928	1934/35		—	—	1928	—	—	1928	1934/35	
	1934/35	1933/34	to 1932	1933	Aver.	1934/35	1933/34	to 1932	1934/35	1933/34	to 1932	1933	Aver.
	1,000 acres					1,000 centals				1,000 bushels			
			1928/29 to 1932/33	1933/34 = 100				1928/29 to 1932/33				1933/34 = 100	
Germany	4,030	3,918	3,844	102.9	104.8	70,634	76,459	68,876	147,156	159,292	143,494	92.4	102.6
Austria	416	423	409	98.4	101.6	6,572	7,340	5,774	13,692	15,292	12,029	89.5	113.8
Belgium	97	92	80	105.2	121.4	2,320	2,214	1,895	4,833	4,613	3,948	104.8	122.4
Bulgaria	569	602	603	94.5	94.4	4,090	7,751	7,133	8,522	16,148	14,861	52.8	57.3
Denmark	840	865	893	97.2	94.1	20,944	21,131	23,062	43,634	44,025	48,046	99.1	90.8
Spain	4,502	4,521	4,599	99.6	98.0	61,996	48,003	48,605	129,161	100,009	101,261	129.1	127.6
Estonia	257	256	273	100.4	94.2	2,531	1,791	2,526	3,273	3,731	5,263	141.3	100.2
Irish Free State .	143	117	116	121.5	122.6	3,234	2,679	2,642	6,779	5,582	5,503	121.4	123.2
Finland	325	320	288	101.5	112.6	4,817	3,936	3,420	10,036	8,200	7,124	122.4	140.9
France	1,911	1,736	1,837	110.1	104.0	25,063	25,244	24,054	52,215	52,594	50,114	99.3	104.2
Engl. and Wales .	861	751	1,063	114.6	81.0	16,285	14,134	19,237	39,927	29,447	40,077	115.2	84.7
Scotland	96	60	95	160.9	101.1	2,016	1,277	1,967	4,200	2,660	4,097	157.9	102.5
Northern Ireland	2	1	2	164.2	141.3	57	33	37	118	70	78	169.9	151.7
Greece	589 ³⁾	553 ³⁾	495	—	—	5,708	5,059	3,443	11,891	10,540	7,172	112.8	165.8
Hungary	1,213	1,197	1,131	101.3	107.2	9,854	18,551	13,874	20,530	38,649	28,906	53.1	71.0
Italy	492	511	556	96.4	88.5	4,486	4,992	5,446	9,347	10,401	11,345	89.9	82.4
Latvia	445	456	432	97.6	103.0	4,801	4,298	3,752	10,002	8,955	7,817	111.7	127.9
Lithuania	503	512	489	98.1	102.7	5,377	5,111	4,851	11,203	10,647	10,107	105.2	110.8
Luxembourg . . .	7	7	10	103.1	76.3	106	106	127	220	220	264	100.1	83.6
Malta 8)	5	6	7	88.6	76.2	114	119	139	238	248	290	96.2	82.2
Norway	147	142	138	103.7	106.4	2,634	2,206	2,326	5,489	4,597	4,846	119.4	113.3
Netherlands . . .	79	44	69	179.0	115.0	2,116	1,109	1,852	4,409	2,311	3,859	190.8	114.3
Poland	2,945	2,882	3,028	102.2	97.3	28,344	31,656	33,191	59,052	65,951	69,148	89.5	85.4
Portugal	—	210	177	—	—	1,126	690	948	2,346	1,438	1,975	163.1	118.8
Romania	4,332	4,485	4,687	96.6	92.4	19,209	41,541	41,907	40,019	86,546	87,308	46.2	45.8
Sweden	261	279	304	93.6	86.0	4,542	4,762	5,101	9,462	9,922	10,628	95.4	89.0
Switzerland . . .	14	17	17	80.4	79.9	224	307	273	467	640	569	72.9	82.0
Czechoslovakia .	1,632	1,639	1,762	99.6	92.6	22,804	29,774	29,076	47,510	62,031	60,577	76.6	78.4
Yugoslavia	1,038	1,078	1,075	96.3	96.6	8,997	10,208	8,792	18,744	21,268	18,316	88.1	102.3
Total Europe . .	27,951	27,680	28,473	101.0	98.2	341,021	372,481	364,326	710,475	776,027	759,022	91.6	93.6
Canada	3,613	3,658	4,778	98.8	75.6	30,596	30,412	50,113	63,742	63,359	104,404	100.6	61.1
United States . .	7,144	10,009	12,739	71.4	56.1	57,086	74,796	135,764	118,929	155,825	282,841	76.3	42.0
Total North Amer.	10,757	13,667	17,517	78.7	61.4	87,682	105,208	185,877	182,671	219,184	387,245	83.3	47.2
Chosen	2,179	2,484	2,349	87.7	92.8	22,638	21,316	18,966	47,163	44,409	39,514	106.2	119.4
Japan	1,860	1,924	2,151	96.7	86.5	34,324	32,944	37,303	71,509	68,635	77,716	104.2	92.0
Syria and Leb. . .	611	765	842	80.1	72.6	5,351	6,270	8,100	11,148	13,062	16,875	85.3	66.1
Turkey	3,294	3,312	3,487	99.5	94.4	41,429	35,247	30,511	86,311	73,432	63,566	117.5	135.8
Total Asia	7,944	8,483	8,229	93.7	90.0	103,742	95,777	94,880	216,131	199,538	197,671	108.3	109.3
Algeria 6)	3,093	3,450	3,423	89.7	90.4	19,621	17,276	16,926	40,878	35,992	35,264	113.6	115.9
Cyrenaica	110	71	81	153.5	135.0	292	359	238	608	747	495	81.3	122.8
Egypt	284	292	357	97.3	79.7	4,336	4,434	5,350	9,033	9,237	11,147	97.8	81.0
Eritrea	67	69	48	96.4	139.2	254	432	205	528	900	428	58.7	123.4
French Morocco .	3,793	3,752	3,174	101.1	119.5	30,865	24,195	22,965	64,303	50,408	47,844	127.6	134.4
Tunisia	988	927	1,328	106.7	74.4	3,307	3,527	5,115	6,890	7,349	10,656	93.7	64.7
Total Africa . . .	8,335	8,561	8,411	97.4	99.1	58,675	50,223	50,799	122,240	104,633	105,834	116.8	115.5
Argentina	1,841 ²⁾	1,783 ²⁾	1,442	103.3	127.7	20,503	17,284	9,491	42,715	36,010	19,774	118.6	216.0
*Chile	1,705 ³⁾	1,379 ³⁾	960	123.7	177.6	—	—	—	—	—	—	—	—
*Uruguay	139	235	155	59.1	89.8	—	3,227	2,403	—	6,723	5,006	—	—
Uruguay	18	15	11	119.0	174.3	125	113	67	260	235	140	110.6	185.3
*New Zealand 7) .	23	30	24	77.7	95.8	—	—	—	—	—	—	—	—
GRAND TOTALS . .	56,720	59,785	64,201	94.9	88.3	611,748	641,086	705,440	1,274,492	1,335,627	1,469,686	95.4	86.7

See notes on page 9.

Oats.

COUNTRIES	†) AREA					†) PRODUCTION							
	1934 1934/35	1933 1933/34	Average 1928 to 1932 — 1928/29 to 1932/33	% 1934 1934/35		1934 1934/35	1933 1933/34	Average 1928 to 1932 — 1928/29 to 1932/33	1934 1934/35	1933 1933/34	Average 1928 to 1932 — 1928/29 to 1932/33	% 1934 1934/35	
				1933 1933/34	Aver. = 100							1933 1933/34	Aver. = 100
1,000 acres					1,000 cents			1,000 bushels					
Germany	7,773	7,864	8,483	98.8	91.6	120,204	153,277	145,021	375,634	478,986	453,187	78.4	82.9
Austria	743	755	757	98.3	98.1	11,034	11,084	8,976	34,482	34,639	28,051	99.5	122.9
Belgium	735	733	705	100.3	104.2	15,083	18,309	15,296	47,135	57,216	47,801	82.4	98.6
Bulgaria	312	327	322	95.6	96.9	1,610	2,863	2,379	5,032	8,948	7,436	56.2	67.7
Denmark	943	943	972	100.0	97.1	21,605	21,971	22,408	67,516	68,658	70,024	98.3	96.4
Spain	1,877	1,894	1,853	99.1	101.3	16,630	13,111	14,739	51,969	40,972	46,060	126.8	112.8
Estonia	341	343	357	99.5	95.6	3,499	2,565	3,086	10,934	8,015	9,645	136.4	113.4
Irish Free State .	583	635	643	91.9	90.8	12,564	13,982	13,919	39,262	43,693	43,496	89.9	90.3
Finland	1,132	1,130	1,108	100.2	102.1	16,989	14,011	13,452	53,090	43,783	42,038	121.3	126.3
France	8,127	8,315	8,512	97.7	95.5	91,597	125,083	105,446	286,239	390,883	329,516	73.2	86.9
Engl. and Wales .	1,401	1,494	1,725	93.7	81.2	24,998	27,462	30,446	78,120	85,820	95,144	91.0	82.1
Scotland	816	856	866	95.4	94.3	14,448	15,546	15,564	45,150	48,580	48,636	92.9	92.8
Northern Ireland .	280	288	300	97.2	93.3	6,143	5,892	6,071	19,198	18,411	18,972	104.3	101.2
Greece	351	341	308	—	—	2,763	2,962	1,756	8,634	9,257	5,486	93.3	157.4
Hungary	567	570	636	99.4	89.2	4,869	7,884	6,972	15,217	24,637	21,789	61.8	69.8
Italy	1,063	1,107	1,218	96.1	87.3	10,975	12,660	13,730	34,297	39,562	42,908	86.7	79.9
Latvia	742	758	745	97.9	99.5	8,567	7,291	6,584	26,770	22,783	20,574	117.5	130.1
Lithuania	811	848	851	95.7	95.3	8,034	7,289	8,330	25,105	22,776	26,031	110.2	96.4
Luxemburg	68	68	73	100.0	93.3	1,027	1,135	977	3,209	3,548	3,054	90.5	105.1
Norway	226	242	239	93.3	94.6	3,890	3,973	3,921	12,157	12,416	12,254	97.9	99.2
Netherlands . . .	321	337	372	95.4	86.3	5,798	6,401	7,035	18,119	20,004	21,984	90.6	82.4
Poland	5,463	5,447	5,342	100.3	102.3	50,150	59,149	55,110	156,718	184,839	172,218	84.8	91.9
Portugal	—	413	444	—	—	1,709	1,164	1,989	5,340	3,636	6,215	146.9	85.0
Romania	2,044	2,050	2,510	99.7	81.4	12,419	17,779	21,205	38,808	55,558	66,265	69.9	58.6
Sweden	1,696	1,541	1,652	110.0	102.7	26,037	23,425	25,194	81,364	73,202	78,730	111.2	103.3
Switzerland . . .	25	40	47	61.3	52.6	449	814	830	1,404	2,545	2,595	55.2	54.1
Czechoslovakia .	1,936	1,976	2,060	97.9	94.0	25,992	34,770	31,365	81,224	108,655	98,016	74.8	82.9
Yugoslavia . . .	916	936	957	97.8	95.7	7,351	8,180	6,773	22,972	25,563	21,165	89.9	108.5
Total Europe . .	§ 41,705	42,251	44,057	98.7	94.6	526,434	620,032	588,574	1,645,099	1,937,585	1,839,290	84.9	89.4
Canada	13,731	13,529	12,979	101.5	105.8	109,181	104,543	127,702	341,190	326,695	399,065	104.4	85.5
United States . .	30,395	36,701	39,888	82.8	76.2	169,221	234,080	389,654	528,815	731,500	1,217,668	72.3	43.4
Total North Amer.	44,126	50,230	52,867	87.8	83.5	278,402	338,623	517,356	870,005	1,058,195	1,616,733	82.2	53.8
Syria and Lebanon	33	30	28	109.7	115.1	320	299	220	1,001	933	686	107.3	145.9
Turkey	419	434	361	96.6	116.0	3,185	4,593	2,703	9,954	14,353	8,447	69.4	117.8
Algeria §	468	451	584	103.6	80.1	4,063	3,105	4,017	12,697	9,703	12,552	130.9	101.2
French Morocco .	86	79	82	109.2	105.8	827	603	670	2,584	1,883	2,093	137.2	123.4
Tunisia	49	51	97	96.6	51.0	353	220	818	1,102	689	2,556	160.0	43.1
Total Africa . .	603	581	763	103.4	79.2	5,243	3,928	5,505	16,383	12,275	17,201	133.5	95.2
Argentina	(2) 3,336	2) 3,566	2) 3,693	93.6	90.3	—	—	—	—	—	—	—	—
*Chile	(3) 2,397	3) 1,651	3) 2,132	145.2	112.4	24,912	18,365	21,569	77,850	57,389	67,403	135.7	115.5
Uruguay	198	264	234	75.3	84.7	—	2,522	2,217	—	7,881	6,928	—	—
—	229	213	147	107.6	156.1	1,177	1,030	746	3,680	3,218	2,332	114.3	157.8
*New Zealand 7) .	313	365	344	85.8	90.8	—	—	—	—	—	—	—	—
GRAND TOTALS .	§ 89,512	95,390	100,355	93.8	89.2	839,673	986,870	1,136,673	2,623,972	3,083,948	3,352,092	85.1	73.9

(†) The years indicated are those of the harvest, single years referring to the northern hemisphere, double years to the southern. — *) Countries not included in the totals. — §) In calculating the totals account has been taken of the probable area cultivated in some countries for which estimates of production are available but not those of area. — w) Winter crop. — s) Spring crop. — x) Approximate revision. — a) Area sown. — 3) Area harvested. — 4) Including spelt and meslin. — 5) Including spelt. — 6) Estimated on 15 May. — 7) Including also areas of feeding and ensilage. — 8) Barley and meslin.

Bulgaria: Weather in December was warm and dry. The end of the month was cold, though not intensely so, and there were falls of snow in some places. Rainfall for the month was below normal. The average monthly temperature varied between 3° and 4° C above normal. The mild weather was favourable to the work of sowing. There was no frost damage.

The area sown with mixed grains this year is 204,400 acres against 208,400 in 1933-34 and an average of 242,100 in the years 1928-29 to 1932-33. Percentages: 98.1 and 84.5.

Estonia: The crops suffered at the end of the autumn from insect attacks especially in the north of the country.

The north was covered with snow about the middle of December but there was only a thin covering in the south.

Crop condition of winter wheat expressed in the system of the country was 3.6 in October and 3.5 in December. Corresponding figures for winter rye are 3.5 and 3.3.

Irish Free State: The weather during December was almost continuously wet, but the temperature was mild. Early sowings were made at the normal time, but later sowings were delayed by the wet condition of the soil. Crop condition was satisfactory on the whole.

France: The estimate of the areas sown up to 1 January indicates a fairly appreciable increase in sowings of winter wheat. This increase is due in large part to the extremely favourable weather, which allowed winter sowings to be carried out rapidly. As the sowing of spring wheat on areas other than those used for winter wheat is prohibited by law, it is probable that sowings of spring wheat will this year be very small. Only if the present figure of sowings is further reduced by winter losses or other causes, will the total area under wheat, which on 1 January was already 13,007,000 acres, be up to the level of last year, at least as the latter was provisionally estimated, namely, at 13,109,000 acres; it is even likely that it will approximate fairly closely to the five-year average, which was 13,277,000 acres. It should be noted that the greatest extension of sowings was in the north, the principal wheat area, where it amounted to 103,000 acres, or 4 %, with respect to last year.

The area sown to meslin up to 1 January was 163,300 acres against 194,500 on 1 January 1934 and 183,800 on the five-year average; 83.9 % and 88.8 %. Rye sowings have also decreased appreciably. As for winter oats and barley, the changes in the areas sown with respect to last year and the average can give no precise indication of the eventual area under these two cereals, since the greater part of the sowings are carried out in spring.

In all, sowings of winter cereals covered on 1 January of this year 17,365,000 acres against only 17,141,000 on 1 January 1934 and the five-year average of 17,111,000 acres, an increase of 1.3 % and 1.5 % respectively.

Throughout December and the first decade of January mild rainy weather persisted. At the beginning of January cultivators began to be preoccupied with the excess of humidity and the lack of cold weather, which threatened to injure crops; cereals in many cases appeared to have developed excessively for the time of year, weeds were growing rapidly and insects were increasing in numbers. The information published on 1 January regarding crop condition was, however, satisfactory. Winter wheat was 75 against 65 on 1 January 1934; meslin 76 against 68; rye 76 against 69; winter barley 75 against 66 and winter oats 76 against 64. These figures indicate a crop condition almost good (good = 80) but they approach very closely to the maximum for that period of the year; they are practically the same as those published on 1 January 1933.

It should be noted that for winter wheat the figures given were particularly good in the North, including the Paris Basin, where they attained or surpassed 80 in a number of *départements*; they were still better in the east, very satisfactory in the other areas and only a little less so in the South, for which the figure was only 66, a little above that indicating a fairly good crop condition.

Toward 10 January a very sharp fall in temperature occurred, several degrees below zero being registered. The ground froze and snow fell in most regions. This cold spell lasted only two or three days and after 14 January the snow melted, the soil thawed almost everywhere and mild, humid weather continued. A somewhat prolonged period of dry cold was still desirable for the crop in the ground though it was generally estimated that progress in cultural methods would generally diminish the great inconveniences that would result from too mild and wet a winter.

At the beginning of January preparations for spring sowings were begun in good conditions.

Great Britain and Northern Ireland: Weather in all parts in December was very wet and mild with an almost entire absence of frost. It was not possible to make much progress with cultivation or sowing, but as such work was generally well forward at the beginning of the month, the position at the end of the month was practically normal except in Northern Ireland where, owing to heavy and rains floods, ploughing was rather backward for the time of year.

Conditions were favourable for the germination of autumn-sown corn and the plants appear to be strong and healthy, though in many areas they are too forward for the time of year.

The area sown to wheat in England and Wales at the end of December 1934 was estimated to be about 4 % greater than at the end of 1933. The barley area was estimated to be about the same, while the area under oats was about 2 % less than at the end of 1933.

The estimated yields of the 1934 cereal crops are higher than the average yields of the past ten years. Both the quality and condition are reported to be generally good but some deterioration occurred in Scotland in cases where bringing in of the crops was delayed.

According to the most recent estimate production of mixed grains this year in England and Wales is about 1,725,000 centals (2,974,000 bushels) against 1,904,000 (3,283,000) in 1933 and 2,182,000 (3,762,000) on the average of the five years ending 1932: percentages 90.6 and 79.1.

Greece: The area sown with wheat this year is 33,400 acres greater than that of last year. The area under barley, oats, rye, and mixed grains, on the other hand, is smaller by 68,000 acres than that of last year.

An increase in the wheat area is recorded in Continental Greece, Epirus, Thrace and Macedonia. A decrease is noted in Thessaly in the wheat area.

The crops are progressing normally. Some damage has been caused in some areas by floods.

Hungary: In the four weeks from 12 December to 9 January temperatures fell progressively so that at the end of this period they were here and there even below normal; the precipitation was above average in the south of the Transdanubian region and below average to the east of the Danube.

Precipitation at the beginning of the period fell in the form of rain and then of sleet and snow. The snow at first melted quickly but from 28 December onwards it lay and at the end of the period there was a thick snow-cover.

Sowings of winter cereals, favoured by the weather, developed very well and entered on the winter uniform and vigorous.

No official reports are available concerning the possible damage done by the frosts to winter cereals before the snow had sufficiently covered the soil.

Italy: Weather during December was wet generally, especially during the first half. Crop condition of wheat at the end of the month was good. In some areas the excessive dampness of the soil caused some damage, which, however, was not serious. In some places, more especially in Central Italy, wheat is in advance of normal development and may suffer from possible frosts. Attacks of field-mice are reported in a few areas, while in some provinces of North Italy there were attacks of *Agriotes lineatus*.

Latvia: In December temperature was almost normal in the East and North-east and below normal in the West. Rainfall was 10-20 mm. The thin covering of snow which fell at the end of November remained throughout December. On the whole, weather during the month was dry and the temperature was moderately high.

According to the replies of agricultural correspondents, crop condition of winter wheat at the beginning of January was average in 17.3 % of the replies, better than average in 80.7 % and below average in 2.0 %. Corresponding figures for winter rye are 11.7 %, 87.0 % and 1.3 %.

Poland: Crop condition of winter cereals as obtained from 3,984 reports received by the Central Statistical Office was as follows in the system of the country.

	15 - XII	15 - XI
Wheat.	3.6	3.7
Rye	3.8	3.9
Barley.	3.5	3.5

The correspondents again stated that the long warm autumn was favourable to the development of winter crops. As in November, owing to the vigorous growth of the crops, it was necessary to pasture animals in the fields in the provinces in the East and in Bialystok, where this situation was observed in nearly all farms. In other areas it has occurred only in a negligible number of instances.

Damage resulting from Hessian fly was recorded in 19 % of the replies. 30 % of the replies noting such damage speak of considerable damage while in 70 % it was not considerable. Most of the replies noting attacks of Hessian fly were sent from the provinces of Warszawa, Lodz and Poznan, and next in importance come the provinces of Lublin, Bialystok and Pomorze. In the other areas the damage was of slight extent.

Brown rust was recorded in 31 % of the total number of replies, 34 % of these replies noting the appearance of rust stated that it was considerable and 66 % that it was slight. Most of these replies were received from the Warszawa area. In other areas rust was much smaller in extent.

The correspondents in the Provinces of Lwow and Stanislawow record an appearance of field-mice.

According to 17 % of the replies, damage has been caused to winter crops by the wet condition of the soil, particularly in Kielce and Krakow.

Portugal: December was very rainy and sowings were somewhat hindered. Germination of early sowings was very regular; resowings were not necessary. Appearance of rye in the north and in the mountainous areas and of wheat in the south and centre was good; for the new season prospects are at present favourable.

Romania: In the first half of December only slight frosts were reported in the hill and mountain areas. There was little snow and that rapidly melted so that on 15 December crops were protected by the snow only here and there and to an insufficient extent. At that date condition of winter cereals was generally very good; in some cases growth was too luxuriant. Up to the above date no losses from frost were reported. Damage to winter wheat by brown rust in Basarabia and the Old Kingdom was small but that caused by mice in Bukovina and Transylvania was more considerable. In the latter half of December temperature remained moderate and the soil remained without a snow-cover. From 1 to 9 January severe frosts were reported and it was feared that heavy damage was suffered by the sowings, particularly in Basarabia. An official enquiry established, however, that losses were not so great, it being estimated that the damage to winter wheat varies from 5 % to 10 % in Basarabia, Moldavia, Dobruja and the eastern section of the Danube plain.

Yugoslavia: In the first two decades of December the weather was somewhat mild and variable. Towards the middle of the third decade there was a sharp fall in temperature and snow.

Condition of winter cereals toward the end of December was good.

U. S. S. R.: Temperature rose a little about 15 December and the snow line which at the beginning of the second decade of the month passed almost in a straight line through Leningrad to the west of Kiev and Odessa retreated to the east. Temperature fell at the end of the second decade and the cold weather persisted through the third decade of the month with the snow line moving again to the west. During the first decade of January there was an intense cold wave in the central, southern and south-western regions. The average day temperature during this decade was below the average of a long series of years and it reached a minimum of 35° C below zero.

On 10 January the depth of the snow cover in the northern part of the Union and in the Middle Volga regions varied between 8 and 12 inches. In the central part of European Russia and in Western Siberia it varied between 4 and 8 inches and in the western and southern regions from 2 to 4 inches and from 0.4 to 2 inches. According to present information, which is not yet complete, winter wheat and rye did not suffer from the cold of the first ten days of January.

By a decree of 26 December the government has granted a subsidy of 24,989,000 centals of seed for feed and fodder crops to be distributed between the collective farms in the republics and regions which suffered from the drought of last year. This subsidy is distributed as follows: Ukraine, 13,922,000 centals, Provinces of Stalingrad and Saratow, 2,528,000 centals for each province, North Caucasus, Middle Volga and Western Siberian regions 1,806,000 centals for each region, and the remainder among a small number of other regions.

According to information published in the Soviet Press, the total crop of cereals and leguminous grains obtained in the Union in 1934 exceeds that of 1932 by 29.3 %. Since the latter crop amounted to 154,000 millions lb. the 1934 may be estimated to 199,078 millions lb. compared with 197,976 million lb. in 1933 and an average of 162,239 million lb. in the five preceding years 1928-32. The 1934 harvest is thus slightly larger (by 0.6 %) than the plentiful crop of 1933 and 22.7 % above the average.

Argentina (Telegram of 28 January): The results of the wheat crop are not satisfactory either in quantity or quality. In the Province of Buenos Aires threshing shows a yield of wheat smaller than expected.

United States: There is an increase in the acreage sown with winter wheat this year of 5.9 % compared with the area sown a year ago and one of 1.1 % over the average of the preceding five years, as indicated in the *Crop Report* for December. There is an increase of 6 % over the 1933 seedings in the important winter wheat States of the Great Plains area. In the 1934 drought area, where forage and pasture were severely reduced by the drought, some of the increase in fall seeding is probably attributable to seeding for fall and winter pasture. In some of the States in which both winter and spring wheat are seeded in the same general areas, there appears to be a tendency to expand winter wheat acreage, which, if carried through the winter, would lead to a reduction in spring wheat seedings in the spring of 1935.

The condition of the crop on December 1 (77.8 %) indicates that abandonment of winter wheat will again be above average. Based upon past relationships, it appears that the abandonment of the 1934 seedings will be in the neighbourhood of 18 %. Abandonment of the 1933 seedings was 21.3 % and the 10-year (1922-31) average abandonment is 12.2 %. A comparatively low yield per acre is also indicated by the condition and corollary weather studies, which indicate a winter wheat production to be harvested in 1935 of about 475,000,000 bushels. The 1933-34 crop was 405,034,000 bushels and the five-year (1928/29-1932/33) average was 572,345,000 bushels.

The winter rye acreage sown this year is 13.3 % greater than that sown in the winter of 1933 and 12.9 % greater than the 1928-32 average. A marked expansion in seeded acreage occurred in the Corn Belt States except the Dakotas. Ordinarily only about 60 % of the seeded acreage of rye is harvested for grain, the remainder being utilized for hay, pasture or turned under as a soil improvement crop; much of the increased acreage seeded this fall was probably seeded for use as fall or early spring pasture.

(Telegram of 28 December): Rainfall was nearly general and improved the situation in the South-east, where drought had prevailed, but rain was still wanted in the belt extending southward from Ohio to Georgia and also on the great Plains. A severe cold wave in the North-west was moving eastward over the winter wheat States, where, save on the northern Great Plains and in the North Central section, the appearance of the crop was unfavourable, owing to lack of snow-cover.

(Telegram of 4 January): Slight damage by excessive cold was registered from the north-western States but the South escaped. Moisture was sufficient except in the Ohio Valley, the extreme Southeast and the belt from the Central Great Plains to the continental divide. Condition of winter cereals was unchanged. There is ample snowcover in the northern Ohio valleys and the Upper Mississippi Valley but in the Lake Region, Iowa and the North-central Great Plains the cover decreased.

(Telegram of 11 January): Weather during the past week was warm throughout the country. Rainfall was nearly general and improved crop conditions in the Pacific Coast area, in a great part of the Mississippi Valley and in some parts of the South-east and South-west. Rain was needed urgently, however, throughout the eastern part of the Ohio Valley, Western Texas, south-eastern New Mexico and northwards to Canada.

Very serious damage to winter cereals was reported from South-eastern Wyoming. crop condition was poor throughout the Western Plains but it was satisfactory over a large part of the East and South-east.

(Telegram of 17 January): Weather during the past week was favourable in a great part of the country but little improvement occurred in conditions in the dry area.

The appearance of the winter wheat crops was unfavourable in the Eastern Ohio Valley, the Western Great Plains, and in the East of the Rocky Mountains. Elsewhere crop condition was satisfactory.

(Telegram of 25 January): Weather during the past week was abnormally cold in an area extending from California to the Central Gulf States and in the East of the Ohio Valley. The drought in the latter area was relieved but the Western Belt remains dry.

Mexico: Weather in November was generally favourable to wheat sowing, which were made on an area larger than that of last year in the Centre, North and North Pacific.

Cyprus: Wheat sowing was delayed in Central Messaoria owing to dry conditions in late November and early December, but a good recovery was reported after the rainfall experienced towards the middle of December. Elsewhere sowing progressed regularly and prospects were generally good. Barley sowing was practically completed at the middle of December, and germination was satisfactory. Prospects were very good.

India (Telegram of 19 January): The first forecast of wheat area in the Punjab for 1934-35 is 9,709,000 acres, a decrease of 8.8 % on the first forecast for 1933-34 and one of 6.9 % on the average of the corresponding forecasts for the five years ending 1932-33. Sowings began on the due date and crop condition is placed at 90 % of normal against 95 % last season on the same date.

Japan: Weather was favourable to cereals.

Algeria: December was generally fine; though in the Centre and East rainfall was sufficient and well distributed, in the west drought persisted and was aggravated on several occasions by hoar-frost toward the end of the month; in the west heavy rains fell in the last days of December and there were complaints of excessive moisture. Sowings were carried out in good conditions save in Oran, where native sowings were hindered by drought; European sowings were practically completed at the end of December. Germination was very regular in the Centre and East but irregular in Oran. In the last-named area growth was very slow owing to the drought and the hoar-frost and the same conditions held good in the East, in the *département* of Constantine, due to the excessive moisture; on the other hand, in the Centre, in the *département* of Algiers, growth was vigorous.

In brief, at the beginning of January condition of winter cereals was mediocre in the West, especially that of native crops, good and even very good in the Centre, fairly satisfactory in the East. In Constantine sowings appeared to cover at least as great an area as last year; in Oran the wheat area appeared to be smaller and that of minor cereals larger.

According to information from a non-official source, there will not be any decrease in area cultivated this year.

Egypt: Weather during December was temperate by day and damp by night and favourable on the whole to growth. Some areas in the provinces of Beni Suef, Asyut and Girga were slightly infested by cut-worm but it has been completely controlled.

Sowing was over in all provinces by the end of the month. Watering and manuring of early and general crops are progressing before the advent of the drought. Growth is satisfactory.

Crop condition of wheat and barley on 1 January 1935 was so expressed in the system of the Institute.

Kenya: Although local rains were experienced in December, the average fall was below normal. The condition of cereals was generally good.

French Morocco: December was rather cold at first in the interior and fairly mild along the coast. Rainfall was somewhat below normal and fine intervals were sufficient to allow cultivators to proceed with sowings. The weather favoured the sowings and they had reached an advanced stage by the beginning of January, especially in the South.

Notwithstanding their economic difficulties, the European settlers were proceeding almost normally with their work. The natives, moreover, having a large supply of seed from the last crop and being assisted by the good weather, were increasing their sowings to the utmost. There is thus no reason for anticipating a fall in the acreage under cereals.

Among the European cultivations there is a clearly discernible tendency to reduce sowings of hard and soft wheat owing to the difficulties met with in the sale of the last crop, and to extend those of oats and barley and leguminous crops. The use of selected seed is growing and has reached native cultivators.

Tunisia: The rains were abundant and fairly well distributed during December; temperature was normal in the first fortnight, below normal in the second. These conditions were favourable to agriculture but the rains delayed operations and the growth of the crops. Native sowings were rather backward in the north at the end of December. Sprouting and development of sowings were very satisfactory save in the lower lands, which were submerged. On the whole crop condition at the beginning of January was good.

Union of South Africa: Soaking rains fell throughout the Union during November, which considerably delayed reaping and threshing of the winter grain crops, especially in the Cape South-western districts. Crops still on the land tended to lodge badly and in many instances moisture penetrated the stacks. Reports indicate that some damage was done by frost early in the month, especially in the irrigated areas along the Orange River. Rust has also made its appearance in many districts and it is feared that, as a result of the continuous rains, it may still cause a considerable amount of damage. Hail has also occurred at various places, but on the whole losses have been negligible.

In the Orange Free State, a record wheat crop is expected this season and good yields are being obtained in some areas of the Transvaal.

Australia (Telegram of 17 January): In Western Australia and New South Wales harvesting has been delayed by low temperatures and in the latter hail and frost damage is reported, yields being below normal and grain light. In South Australia the grain is being cut in average condition and an average yield is expected. Reports from Victoria are fair to good.

MAIZE

Argentina (Telegram of 28 January): Condition of maize is good.

Chile: According to the most recent estimate production of maize in 1933-34 is about 1,485,000 centals (2,652,500 bushels) against 1,820,000 (3,249,600 bushels) in 1932-33 and 1,528,000 (2,728,500 bushels) on the average of the five years ending 1931-32; percentages 81.6 and 97.2.

Indo-China: The crop was satisfactory in South Annam, where it had been completed; in the other provinces of the South appearance was good. In one province of North Annam the maize had been flattened by the floods; in the others preparation of the ground had hardly begun at the end of November. In Cambodia sowings began in November; in one province a reduction of area was reported.

Maize.

COUNTRIES	AREA					PRODUCTION								
	1934	1933	Average 1928 to 1932	% 1934		1934	1933	Average 1928 to 1932	1934	1933	Average 1928 to 1932	% 1934		
				1933	Average							1933	Average	
1,000 acres			= 100	= 100	1,000 centals			1,000 bushels of 56 lb.			= 100	= 100		
Austria . .	160	159	148	101.0	108.1	3,303	3,011	2,667	5,897	5,377	4,763	109.7	123.8	
Bulgaria . .	1,658	1,796	1,757	92.3	94.3	18,067	20,967	17,660	32,262	37,441	31,536	86.2	102.3	
France . .	823	832	843	98.8	97.5	11,452	9,589	10,516	20,449	17,123	18,778	119.4	108.9	
Greece . .	586	645	555	90.8	105.6	5,291	6,026	3,755	9,448	10,760	6,706	87.8	140.9	
Hungary . .	2,807	2,816	2,726	99.7	103.0	46,334	39,889	37,085	82,740	71,230	66,223	116.2	124.9	
Italy . . (s)	3,271	3,190	3,391	102.5	96.5	64,330	52,549	50,695	114,874	93,837	90,528	122.4	126.9	
Italy . . (t)	384	346	252	111.1	152.3	6,059	4,564	2,733	10,820	8,151	4,880	132.7	221.7	
*Poland . .	225	225	231	99.9	97.2		1,232	2,040		2,200	3,732			
Romania . .	12,368	11,928	11,470	103.7	107.8	105,866	100,408	113,401	189,048	179,301	202,502	105.4	93.4	
Switzerland .	2	2	3	81.3	74.0	55	63	71	99	113	126	87.2	78.4	
Czechoslov. .	1) 359	316	351	113.4	102.3	2) 5,447	3,370	5,466	2) 9,728	6,018	9,760	161.6	99.7	
Yugoslavia . .	3) 6,548	6,518	6,066	100.5	108.0	105,702	78,883	76,843	188,754	140,863	137,220	134.0	137.6	
Total Europe	28,956	28,548	27,562	101.5	105.1	371,906	319,319	320,892	664,119	570,214	573,022	116.5	115.9	
Canada . .	161	137	143	117.9	112.8	3,807	2,830	2,997	6,798	5,054	5,351	134.5	127.0	
United States	87,486	103,260	102,768	84.7	85.1	773,202	1,316,928	1,434,802	1,380,718	2,351,658	2,562,147	58.7	53.9	
Cambodia . .	741	297	92	250.0	802.4	9,921	3,748	1,079	17,716	6,693	1,927	264.7	919.2	
Syria & Leb.	61	67	76	90.9	88.0	526	573	837	939	1,024	1,494	91.7	62.8	
Turkey . .	778	942	884	82.6	88.0	7,108	12,502	10,707	12,692	22,324	19,121	56.9	66.4	
Algeria . .	25	25	23	100.7	107.9	165	127	146	295	228	260	129.7	113.4	
Egypt . .	1,629	1,638	2,036	99.4	80.0	34,172	32,536	41,657	61,021	58,101	74,389	105.0	82.0	
Eritrea . .	11	27	21	40.9	52.3	79	220	177	142	394	317	36.0	44.7	
Kenya 4) . .	123	113	193	109.0	63.8	1,990	1,494	2,604	3,554	2,667	4,650	133.2	76.4	
French Morocco .	1,013	887	714	114.2	142.0	4,564	3,096	3,171	8,149	5,528	5,663	147.4	143.9	
Tunisia 5) .	44	37	44	120.0	101.7	132	132	130	236	236	232	100.0	101.7	
TOTALS . .	121,038	135,978	134,556	89.0	90.0	1,207,455	1,693,505	1,819,199	2,156,170	3,024,121	3,248,573	71.3	66.4	

* Country not included in the totals. — s) Spring crop (*maggengo*). — t) Summer crop (*cingantino*). — 1) Of which 218,000 acres of unmixed crop and 141,000 acres of mixed crop. — 2) Of which 3,538,000 centals (6,319,000 bushels) of unmixed crop and 1,909,000 centals (3,409,000 bushels) of mixed crop. — 3) Unofficial figure. — 4) European crop. — 5) Maize and sorghum.

French West Africa: In Dahomey, which is by far the leading maize producer of the group, the rains were abundant and prolonged, favouring the maize crop as well as food crops. The second crop of maize was good in Bas-Dahomey.

In Senegal, though crops suffered from the bad distribution of the rains, results were generally satisfactory and the quantity exportable was estimated at about 160,000 bushels. In Mauritania production appeared likely to be at least equal to that of the preceding year, thanks to the extension of area and despite the scarcity, irregularity and lateness of the rains.

In Niger crops also suffered from the lateness of the rains but the area cultivated has been further increased so that production appeared likely to be satisfactory.

Egypt: The harvesting of maize (*nili*) was completed at the end of December. Crop condition on 1 January 1935 was 100 as at the same date a year ago. The yield is normal.

Kenya: Maize condition in December was good on the whole.

Union of South Africa: Generally farmers were still busy ploughing and planting in November.

RICE

Argentina: Sowing of rice was making good progress in December in the chief producing areas of the country.

India: The third provincial forecast of the area sown in Burma is 12,658,300 acres, which is 21,800 acres less than the second forecast and 260,400 acres less than last season's final figure. The area destroyed is estimated at 265,100 acres, which is 131,900

Rice.

COUNTRIES	AREA					PRODUCTION OF ROUGH RICE							
	1934/35	1933/34	Average 1928/29 to 1932/33	% 1934/35		1934/35	1933/34	Average 1928/29 to 1932/33	1934/35	1933/34	Average 1928/29 to 1932/33	% 1934/35	
				1933/ 1934	Average age							1933/ 1934	Average age
1,000 acres		= 100	= 100	1,000 centals		1,000 bushels of 45 lb.		= 100	= 100				
Bulgaria . .	15	17	18	86.0	79.0	298	291	338	662	646	750	102.5	88.3
Italy . . .	323	316	337	102.1	95.8	13,602	13,398	14,437	30,226	29,772	32,081	101.5	94.2
United States	781	792	923	98.6	84.6	17,233	16,676	19,282	38,296	37,058	42,848	103.3	89.4
Chosen . . .	3,938	4,160	3,985	94.7	98.8	...	74,440	62,683	...	165,418	139,293	...	...
Formosa 1) .	713	708	652	100.7	109.4	17,985	15,703	13,861	39,965	34,895	30,802	114.5	129.7
India 2) . .	78,486	79,762	79,176	98.4	99.1	...	...	...	...	...	...	...	...
Indo-China:													
Annam 3) .	945	948	1,021	99.7	92.5	7,540	8,598	7,435	16,755	19,106	16,522	87.7	101.4
Tonkin 4) .	1,156	1,233	1,237	93.8	93.4	12,801	13,974	14,736	28,446	31,053	32,746	91.6	86.9
Japan . . .	7,776	7,779	7,915	100.0	98.2	206,675	289,882	241,076	459,268	644,169	535,713	71.3	85.7
Siam 5) . .	8,461	8,019	7,596	105.5	111.4	114,288	110,402	95,982	253,968	245,333	213,289	103.5	119.1
Syria & Lebanon . .	2	1	6	197.7	494.3	...	15	5	...	34	12	...	...
Turkey . . .	74	51	52	143.1	140.1	1,256	957	747	2,791	2,126	1,661	131.3	168.1
Egypt . . .	396	438	301	90.4	131.4	11,200	11,775	8,054	24,887	26,166	17,898	95.1	139.0

1) First crop. — 2) Second estimate. — 3) First half-year. — 4) Rice of the fifth month. — 5) First estimate. Area sown and production in the whole country. The corresponding figures for the harvested area are as follows: 7,591; 7,448; 6,589; 101.9; 115.2. — 6) Area inferior to 500 acres.

acres more than the second forecast but still 189,300 acres less than the area actually destroyed last season; the decrease in this figure is almost entirely in Upper Burma. The area likely to mature is estimated at 12,393,200 acres, decreases of 153,700 acres acres on the second provincial forecast, 110,800 on the third forecast of last season

and 71,100 on the final figures of last season. In Lower Burma the area sown is estimated at 9,676,910 acres, which is 47,400 acres less than the corresponding estimate of last season, 30,900 acres less than the final figures of last season and 18,700 acres below the second forecast of the current season. The area likely to mature in Lower Burma is estimated at 9,577,000 acres, decreases of 53,100 on the third forecast of last season, 27,900 on the final figures of last season and 93,600 on the second forecast of the current season. The crop in Lower Burma is not, on the whole, as good as in 1933-34, when conditions were unusually favourable. Bassein, Henzada, Prome and Amherst report condition figures greatly below those of last year; in five of the other principal districts in Lower Burma the crop is considered rather better than that of last season, in four the estimate is the same and in three it is lower. Upper Burma estimates a decrease of 15 % in matured area; there was a shortage of water in some irrigated areas in the middle of the season and the average of the condition figures is lower than last year. The surplus available for export from the 1934-35 crop was estimated in December at 7,728 million pounds of rice and rice products against the corresponding estimate of 7,168 million pounds in 1933-34.

In Bengal the December forecast of area under winter padi was 5 % below the corresponding estimate of 1933-34. Harvesting proceeded briskly in the latter part of December, when moderate rains with occasional heavy showers that somewhat affected operations gave way to dry weather. In the first week of January reaping was nearly completed; threshing was going on. According to the estimates of the district officers the average outturn of the crop for the province was 81 % of normal; on this basis it would be 11 % less than that of last season. The autumn crop is also estimated to have been smaller.

In Bihar and Orissa the area under winter rice is estimated at 6 % greater than the corresponding estimate of last season. Light rain was general in December and the first week of January. Harvesting went on throughout this period and threshing was begun in the second decade of December. Condition of winter rice was estimated at 89 % of normal or 99 % of the past ten years' average and outturn at 14 % above that of 1933-34. Production of autumn rice, as in Bengal a much smaller crop, is less than last season.

The United Provinces have a sown area 6.5 % greater than last season. The seasonal distribution of rainfall favoured the early rice but not the late. For the province as a whole the outturn is estimated at 80 % of normal.

In the Central Provinces threshing continued in December and early January with light showers in the latter half of the period. Area was 1 % less than last season but, the season having been favourable, production is estimated at 5 % above that of 1933-34.

In Assam the area under winter rice was 2 % greater than in 1933-34. Despite some damage by flood, drought and insects, production, thanks to more favourable weather, is estimated at 14 % above that of last season for winter rice; a decrease is estimated for the much smaller autumn crop.

The first crop in Madras had generally been harvested by mid-December and yield was reported to be normal or a little below it. The area sown up to 25 November was 7 % below that to the corresponding date last season, due to late and insufficient rains. Precipitation continued to be below normal in December and the crop was reported on 5 January to be affected in Bellary, north Arcot and Malabar by insufficiency of moisture.

Indo-China: Harvesting of the crop of the tenth month in Tonkin and of that of the second semester in Annam was almost completed at the end of November.

In Tonkin yields were very variable and in the southern districts, which suffered from floods, distinctly mediocre; on the whole they seem almost the same as last year and the five-year average. In Annam yields are below normal in the North and Centre, where the padis were in many cases flooded; the loss varied from 10 % to 30 % according to province; in the South the crop was fairly good. Rice of the twelfth month had a good appearance in South Annam.

In Cochín-China early varieties in the east gave satisfactory results and yields above average, in the west yields are average. Standing rice, whether of main crop or late varieties, had not a satisfactory appearance in the east, having suffered from drought, and in some areas had begun to yellow; in the centre the crop appeared in general good despite rather serious local damage caused by the recent floods; in the west floods and subsequently drought also caused losses but appearance was on the whole satisfactory.

In Cambodia light varieties gave normal yields; average and heavy varieties, which were flowering at the end of November, had also suffered from drought; on the other hand the losses caused by the inundations of the Mekong were less serious than had been believed. Insects were everywhere numerous.

The 1935-36 season opened with rather unsatisfactory conditions in the North and Centre of Annam, where sowings in nurseries suffered from floods or drought; in the higher padis of North Annam, however, the sowings were fairly successful and in the Centre the rains of November were very beneficial. In the South transplanting began toward the end of November in satisfactory conditions.

British Malaya: Precipitation in November was average except in parts of Kedah, where heavy rains early in the month gave way to hot conditions, and the central areas of Perak and Negri Sembilan, the inland and south coast districts of Selangoo and the central districts of Johore, where conditions were very dry. Appreciable flood damage was reported from Kedah and the riverine *mukims* or Lower Perak and minor flooding in a number of other districts.

In Krian flowering began in several areas and the gradual withdrawal of water from the fields was expected to commence early in December. Insect pests had caused only slight damage, while depredations by rats (though on the increase during the period) had been of no particular consequence. An increased measure of control has been general throughout the district.

In Kedah there was considerable flood damage. Lesser floodings were also reported from Province Wellesley North, in the coastal and southern areas of Pahang and in the riverine *mukims* of Lower Perak.

Harvesting had begun in parts of Negri Sembilan, of Pahang and of Selangor. The irregularity of planting resulted in considerable bird damage.

In the newly-opened areas in Perak planting was continued and good growth was reported in the earlier-planted centres. In Kelantan planting was practically completed and the crop was making good progress.

French West Africa: In Mauritania and Niger the expansion of the area allows a satisfactory production to be expected despite the delay in the rains.

Egypt: Harvesting of the *nili* crop has been completed. Unit yields are 6 % above average.

POTATOES

Germany: In the following table are given the proportions of potatoes affected by disease in the last three years.

YEAR	Production of potatoes (main crop and earlies)				
	Total production		of which diseased		
	Thousand centals	Thousand bushels	Absolute figures		%
			Thousand centals	Thousand bushels	
<i>Earlies.</i>					
1934	51,851	86,417	1,680	2,799	3.2
1933	68,357	113,927	2,002	3,337	2.9
1932	69,870	116,447	2,767	4,612	4.0
<i>Main crop.</i>					
1934	979,488	1,632,448	42,825	71,374	4.4
1933	903,254	1,505,394	27,950	46,583	3.1
1932	966,668	1,611,082	41,885	69,807	4.3

Potatoes.

COUNTRIES	PRODUCTION												
	1934	1933	Average 1928 to 1932	% 1934		1934	1933	Average 1928 to 1932	1934	1933	Average 1928 to 1932	% 1934	
				1933 = 100	Average = 100							1933 = 100	Average = 100
1,000 acres					1,000 centals			1,000 bushels of 60 lbs					
Germany . .	7,183	7,139	7,014	100.6	102.4	1,031,340	971,612	967,078	1,718,865	1,619,320	1,611,765	106.1	106.6
Austria . .	506	504	476	100.3	106.2	61,628	51,918	58,763	102,712	86,528	97,937	118.7	104.9
Belgium . .	393	404	419	97.2	93.7	70,077	81,336	81,661	116,793	135,558	136,099	86.2	85.8
Bulgaria . .	37	35	30	104.4	121.6	2,490	1,784	1,149	4,150	2,973	1,916	139.6	216.6
Estonia . .	177	169	163	105.0	109.1	17,935	20,923	16,555	29,891	34,871	27,591	85.7	108.3
Irish Free St.	343	341	353	100.5	97.0	56,999	55,972	56,170	94,999	93,286	93,617	101.8	101.5
Finland . .	212	199	179	106.4	117.9	22,928	28,258	18,972	38,213	47,096	31,619	81.1	120.9
France . .	3,441	3,436	3,531	100.1	97.4	339,222	326,767	326,926	565,359	544,601	544,866	103.8	103.8
Engl. a. W.	487	519	477	93.9	102.3	77,034	77,907	69,911	128,389	129,845	116,515	98.9	110.2
Scotland . .	140	153	138	91.8	101.6	23,005	24,125	21,903	38,341	40,208	36,505	95.4	105.0
N. Ireland .	137	139	144	98.8	95.4	20,673	21,250	22,214	34,455	35,416	37,022	97.3	93.1
*Greece . .	49	43	29	114.2	170.2	...	2,493	1,189	...	4,155	1,982	...	...
Hungary . .	723	726	693	99.6	104.3	49,669	40,910	37,413	82,780	68,182	62,354	121.4	132.8
Italy . .	989	985	930	100.4	106.3	59,672	52,340	45,208	99,451	87,232	75,346	114.0	132.0
Latvia . .	266	257	225	103.4	118.4	31,875	30,921	21,473	53,123	51,534	35,788	103.1	148.4
Lithuania .	452	441	370	102.4	122.2	57,007	40,222	37,422	95,009	67,035	62,368	141.7	152.3
Luxemburg .	41	41	41	100.1	99.5	4,700	3,794	4,421	7,834	6,323	7,368	123.9	106.3
Malta . .	7	7	7	96.8	95.0	406	451	632	676	752	1,053	89.9	64.2
Norway . .	120	120	119	100.2	100.9	17,649	21,534	19,515	29,414	35,890	32,525	82.0	90.4
Netherlands	351	380	426	92.6	82.4	54,895	67,319	77,025	91,490	112,196	128,372	81.5	71.3
Poland . .	6,915	6,770	6,546	102.1	105.6	700,366	624,573	667,013	1,167,253	1,040,934	1,111,666	112.1	105.0
*Romania 1)	505	489	487	103.3	103.7	...	30,082	41,815	...	50,136	69,691	...	...
Sweden . .	327	327	339	100.0	96.5	35,054	43,597	39,540	58,422	72,659	65,899	80.4	88.7
Switzerland.	112	117	115	95.7	97.3	17,204	18,338	15,191	28,674	30,563	25,318	93.8	113.3
Czechoslov.	1,842	1,819	1,780	101.2	103.5	171,181	180,826	208,300	285,297	301,371	347,159	94.7	82.2
Total Europe	25,201	25,028	24,515	100.7	102.8	2,923,009	2,786,677	2,814,455	4,871,590	4,644,373	4,690,668	104.9	103.9
Canada . .	569	528	564	107.8	100.9	48,095	42,745	46,017	80,158	71,242	76,694	112.5	104.5
United States	3,303	3,194	3,244	103.4	101.8	231,172	192,122	218,037	385,287	320,203	363,395	120.3	106.0
—
*Syria & Leb.	17	17	18	101.9	97.8	...	672	1,008	...	1,120	1,679	...	...
Turkey . .	64	109	89	58.8	72.0	2,774	3,673	2,107	4,624	6,122	3,512	75.5	131.7
Algeria . { s)	14	18	27	80.4	52.0	851	1,069	908	1,418	1,781	1,513	79.6	93.7
{ t)	25	22	26	114.5	95.8	1,488	1,054	973	2,480	1,756	1,622	141.2	152.9
TOTALS . .	29,176	28,899	28,465	101.0	102.5	3,207,389	3,027,340	3,082,497	5,345,557	5,045,477	5,137,404	105.9	104.1

*) Countries not included in the totals. — s) Early crop. — t) Main crop. — 1) Unmixed crop.

*** St. r. Engl.

Great Britain and Northern Ireland: Potatoes were a satisfactory crop with disease less prevalent than usual.

Argentina: Potato planting was making good progress in the province of Buenos Aires in December and germination of the early crop was satisfactory. There were complaints of damage resulting from frost, hail and excessive rains in some areas in the south of the province. The condition of the crop in Santa Fé was fairly good. Liftings in the north were giving good yields. In the South of Santa Fé flowering was irregular owing to excessive rain. In the other producing centres prospects varied from average to good.

Chile: Production of potatoes in 1933-34 was very large, being 13,480,000 centals (22,460,000 bushels) against 10,550,000 (17,580,000 bushels) in 1932-33 and 9,360,000 (15,600,000 bushels) on the average of the five years ending 1931-32; percentages 127.8 and 144.0. The area devoted to potatoes was inferior 4 % to 1932-33 but superior 17.4 % on the average.

Cyprus: At the middle of December lifting of potatoes was well advanced.

SUGAR

As in previous years, sugar prices for the whole of the past year are published in the following summary table. The quotations are those of Thursday and are for New York, London, Surabaya, Prague, Paris and Magdeburg.

By the opening of 1934 a fall of prices due principally to the uncertainties left by the Cuban revolution had already lasted for about four months.

On the American markets the decline continued beyond the middle of January, until, with Mr. Roosevelt's message to Congress on the financial situation, there was a revival of activity, bringing with it a rise in sugar prices. To this general factor must be added that as regards sugar the satisfaction felt in sugar circles at the agreement between the opposing parties in Cuba and in the election of Col. Mendieta as president contributed notably to a feeling of greater confidence in the island situation, which had till then been very confused. The British markets, which had already reacted at the beginning of the year against a further decline, again raised their quotations parallel to the American. In mid-February, however, in a further message to Congress, President Roosevelt announced the proposal to contingent and control American domestic and island production and to apply a processing tax for indemnifying beet-growers who had reduced their crops. In addition he expressed the intention to increase the preference enjoyed by Cuban sugar by a Cuban-American agreement in the near future. These proposals caused a fall in prices that continued until the early part of March. This depressing influence also influenced the British market, where quotations had so far remained firm.

Subsequently prices oscillated irregularly about the same level, slight increases alternating with slight decreases, until the early part of June, both on the American and on the British markets. These rising and falling movements were contributed to by the various proposals in the House of Representatives for higher or lower processing taxes or import duties of different extent. The

Sugar prices.

DATE	New-York	London		Surabaya	Prague	Paris	Magdeburg
	Cuba centrifugals 96° c. & f. cents per lb.	Cane centrifugals 96° c. i. f. sh. per 112 lb.	Granulated duty free sh. per 112 lb.	s. h. s. spot — fl. per 100 kg.	Raw sugar 88° spot crowns per 100 kg.	No. 3 Crystallized frs. per 100 kg.	Refined — Marks per 50 kg.
4 January 1934	1.20	4/7	18/11	5.40	55.50	227.00	31.40
11 " "	1.17	4/9	18/11	5.40	55.00	226.00	31.65
18 " "	1.17	4/10	19/1	5.40	54.50	227.50	31.60
25 " "	1.20	5/1	19/1	5.42	54.00	228.75	31.65
1 February	1.25	5/3	19/2	5.42	54.00	228.75	31.55
8 " "	1.42	5/8	19/6	5.51	55.50	229.50	31.75
15 " "	1.35	5/8	19/7	5.51	59.50	228.75	31.80
22 " "	1.27	5/4	19/4	5.45	59.12	228.00	31.75
1 March	1.34	5/3	19/4	5.42	58.87	229.00	31.90
8 " "	1.20	5/1	18/10	5.40	58.00	227.75	31.90
15 " "	1.48	5/1	19/1	5.42	58.00	227.75	31.90
22 " "	1.40	4/11	18/10	5.47	56.50	226.75	31.70
29 " "	1.42	4/10	18/10	5.47	55.75	225.50	31.92
5 April	1.42	4/10	18/10	5.47	55.50	227.25	31.85
12 " "	1.30	4/6	18/6	5.47	53.50	226.25	32.10
19 " "	1.30	4/10	18/7	5.47	53.50	222.25	32.05
26 " "	1.35	4/10	18/9	5.47	53.00	221.25	31.97
3 May	1.41	4/10	18/9	5.47	53.00	223.50	32.15
10 " "	1.47	4/10	18/10	5.50	52.25	222.50	32.25
17 " "	1.30	4/9	18/8	5.57	52.25	223.25	32.17
24 " "	1.25	4/9	18/5	5.57	52.25	225.00	32.25
31 " "	1.25	4/10	18/8	5.57	52.25	224.75	32.22
7 June	1.28	4/10	18/8	5.57	52.25	222.00	32.30
14 " "	1.40	5/1	18/10	5.60	52.50	223.25	32.37
21 " "	1.60	5/1	18/10	5.62	54.00	221.75	32.30
28 " "	1.65	4/10	18/10	5.69	53.50	218.25	32.40
5 July	1.65	5/—	18/10	5.69	53.50	223.00	32.30
12 " "	1.65	4/10	18/11	5.70	53.00	223.25	32.47
19 " "	1.67	4/10	18/9	5.70	53.00	223.50	32.50
26 " "	1.68	4/11	20/2	5.72	52.50	225.50	32.42
2 August	1.77	4/10	20/2	5.72	—	226.75	32.70
9 " "	1.82	4/10	20/2	5.72	—	228.00	32.45
16 " "	1.80	4/10	20/1	5.72	—	227.50	32.45
23 " "	1.74	4/9	20/1	5.72	—	228.75	32.70
30 " "	1.85	4/9	20/1	5.72	—	243.50	32.65
6 September	1.96	4/7	19/11	5.72	—	237.50	32.85
13 " "	1.96	4/6	19/9	5.72	—	236.25	32.85
20 " "	1.96	4/4	19/9	5.72	—	233.00	—
27 " "	2.02	4/5	19/7	5.72	—	212.00	—
4 October	2.10	4/4	19/9	5.72	—	198.00	31.42
11 " "	2.03	4/6	19/7	5.72	—	194.00	31.45
18 " "	2.01	4/4	19/7	5.72	—	194.00	31.50
25 " "	1.95	4/3	19/6	5.72	47.75	190.25	31.40
1 November	1.90	4/1	19/4	5.72	45.75	184.50	31.45
8 " "	1.96	4/1	19/4	5.72	44.00	185.00	31.30
15 " "	1.96	3/10	19/3	5.72	43.00	178.50	31.40
22 " "	2.18	4/3	19/6	5.72	43.25	178.50	31.45
29 " "	2.18	4/4	19/6	5.72	43.25	178.00	31.45
6 December	2.07	4/4	19/6	5.72	43.50	180.75	31.50
13 " "	1.96	4/4	19/6	5.72	43.50	183.00	31.40
20 " "	1.70	4/3	19/6	5.72	43.50	182.50	31.45
27 " "	1.70	4/3	—	n. 5.75	43.50	183.00	31.45

first news, later confirmed, of an increase in beet area in Europe played some part in the decline, while a recovery of Cuban sugars in early May is to be attributed to the lowering of import duties on Cuban sugar following on the signature of the Sugar Bill by President Roosevelt. Subsequently, there was a further sharp fall in prices owing to the uncertainty caused by the announcement of processing taxes to be determined later. Toward the end of May Cuba was authorized to export 1,736,000 long tons to the United States; this depressed

prices in the first decade of June. In the United Kingdom, on the other hand, prices rose slightly but, owing to the low rate of sterling, the real increase was insignificant.

From the first decade of June prices on the American market again rose slowly but steadily until the end of November. Several factors determined this movement. The initial impulse was given by the new and more favourable tariff on sugar from Cuba. In July the increase continued owing to the expectations of a reciprocity treaty between the United States and Cuba and was also favoured in the first part of August by the approval of the import quota into the United States from Puerto Rico and of the distribution of these between the factories in that island. By this proviso imports into the United States were practically at once checked since some Puerto Rican producers had already reached or even exceeded their quotas.

At the end of August the treaty between the United States and Cuba for a new reciprocal customs tariff agreement for various articles of interest to the two countries was signed. Amongst these was, of course, sugar, the duty of 1.50 cents a pound being lowered to 0.90 cent. As a consequence of this agreement the rise in sugar prices received a fresh impulse and in a fortnight the quotation advanced from 1.74 to 1.96 cents. This intense activity was mitigated by the decree signed by President Mendieta on 31 August whereby the minimum price of Cuban sugar permitted to be exported was to be fixed and announced every day. At first this decree caused some perplexity regarding the carrying out of contracts previously made; subsequently, as the price fixed seemed to buyers to be too high, unsold stocks accumulated in Cuba. As a result prices, which had risen continuously until early October, again declined, save for a shortlived recovery in mid-November, until the end of the year.

American quotations, as above indicated, began to recover at the end of May but Great Britain's quotations simultaneously began a slow decline that lasted until the end of December. This opposition was in part only apparent due to the change in value of sterling, and in part real, since the London market has felt the pressure of large stocks existing in Empire countries.

Price movements on the European markets reflected in part those in America and the United Kingdom but were principally due to local speculation and intervention. Thus the Paris market, after having maintained prices with little variation from January to the end of August, suddenly showed a quotation on 30 August 14.75 francs higher, due, according to the President of the *Syndicat de Commerce des Sucres*, to a campaign for low prices that induced many buyers to delay as much as possible the determinations of prices which are normally carried out gradually from the beginning to the end of the month. The accumulation of these price agreements caused the rise on the market. When this short period of agitation had passed calm gradually returned and prices declined up to the end of the year, influenced also by the good beet crops. The level of quotations rose slightly in December and remained at this level throughout the month, in part due to the declaration of the President of the Council to the *Confédération des groupements commerciaux et industriels de France* concerning the aims of the Government, which are to render obligatory, for the

period of the crisis only, agreements between producers for the control of production.

The Prague market reached its maxima in February-March, not because of any particular contrast between demand and supply but exclusively because of the speculation encouraged in the first place by the expected devaluation of the Czechoslovak crown and by the devaluation itself. From that date onward Prague quotations weakened until the end of the year, with only a transient recovery at the end of June and beginning of July.

Production of Beet-sugar (raw).

COUNTRIES	PRODUCTION 1 SEPT. - 31 Dec.		TOTAL PRODUCTION DURING THE SEASON				
	1934-35	1933-34	1934-35 1)	1933-34	Average 1928-29 to 1932-33	% 1934-35	
						1933-34 = 100	Average = 100
	thousand cents	thousand cents					
Germany	36,186	30,588	36,338	31,508	40,038	115	91
Austria	4,427	3,601	4,982	3,758	3,111	133	160
Belgium	2) 5,034 2)	4,678	5,842	5,360	5,553	109	105
Bulgaria	49	855	50	916	763	5	7
Denmark	—	—	1,764	5,375	3,291	33	54
Spain	—	—	6,393	4,850	5,827	132	110
Irish Free State	1,001	480	1,565	778	455	201	344
Finland	194	88	198	161	83	124	239
France	24,896	20,031	25,353	20,787	21,715	122	117
Great Britain	11,759	9,501	13,007	11,156	6,842	117	190
Hungary	2) 2,638 2)	2,978	2,646	2,989	4,099	89	65
Italy	2) 7,623 2)	6,580	7,716	6,713	8,430	115	92
Latvia	2) 588 2)	465	970	714	229	136	423
Lithuania	335	178	342	179 3)	283	191	121
Netherlands	2) 4,856 2)	5,433	5,203	6,129	5,556	85	94
Poland	2) 9,180 2)	7,307	9,700	7,560	14,759	128	66
Romania	—	—	2,535	3,554	2,447	71	104
Sweden	—	—	5,989	6,720	3,740	89	160
Switzerland	—	—	187	198	140	95	133
Czechoslovakia	13,989	11,248	13,999	11,371	20,650	123	68
Yugoslavia	—	—	1,367	1,642	2,324	83	59
Total Europe a)	—	—	146,146	132,418	150,335	110	97
U. S. S. R.	—	—	31,000	24,250	26,552	128	117
Total Europe b)	—	—	177,146	156,668	176,887	113	100
Canada	—	—	1,418	1,493	1,027	95	138
United States	—	—	24,989	35,312	24,946	71	100
Total North America	—	—	26,407	36,805	25,973	72	102
Japan	—	—	595	564	570	106	104
Turkey in Asia	—	—	1,433	1,598	335	90	428
Total Asia	—	—	2,028	2,162	905	94	224
GENERAL TOTALS { a) . . .	—	—	174,581	171,385	177,213	102	99
{ b) . . .	—	—	205,581	195,635	203,765	105	101

a) Not including U. S. S. R. — b) Including U. S. S. R. — 1) Approximate data. — 2) Production to the end of November. — 3) Average 1931-32 to 1932-33.

Such a passive condition is to be traced principally to the saturation of the export markets and in part also to the great difficulties met with in the Elbe navigation.

The movement of prices on the Magdeburg market in 1934 was small and without notable changes. It may be summarized as a slight and continued upward movement with small upward and downward oscillation until the beginning of September. At that date prices underwent a somewhat appreciable decline with the approach of the new crop, which was reported to be very good, and subsequently remained practically at the same level to the end of the year.

The Surabaya market was regular and without any abrupt changes. Prices in 1934 increased gradually and very slowly. The lowest quotations were at the beginning of the year and the highest at the end. Between the maxima and minima there was a difference of 0.32 florins per quintal and the slight increase is due probably to the continued restriction of production in Java. In any case a closer analysis is not always easy since the NIVAS frequently sells sugar at prices unknown and sometimes does not even intimate the amount sold. Sometimes its prices are below those of the market.

*The figures in the following table
are supplied by the "Association Internationale Sucrière" of Vienna.*

COUNTRIES	Sugar-beet		Raw sugar	
	1934	1933	1934-35	1933-34
THOUSAND CENTALS				
Germany	223,206	182,641	36,338	31,508
Austria	30,591	23,365	4,975	3,758
Belgium	39,463	37,699	5,919	5,446
Denmark	17,154	33,973	1,775	5,600
Irish Free State	10,516	4,519	1,563	778
Hungary	17,485	17,823	2,630	2,989
Italy	58,423	46,738	7,562	6,625
Poland	56,813	40,689	9,811	7,585
Sweden	40,574	40,101	5,989	6,720
Czechoslovakia	83,231	61,967	13,959	11,409
Yugoslavia	11,455	10,413	1,378	1,635
Turkey	8,863	10,935	1,433	1,612
TOTAL . . .	597,774	510,863	93,332	85,665
SHORT TONS				
Germany	11,160,164	9,131,930	1,816,889	1,575,380
Austria	1,529,513	1,168,256	248,768	187,896
Belgium	1,970,000	1,880,000	295,960	272,310
Denmark	857,700	1,699,000	88,700	280,000
Irish Free State	526,000	225,954	78,130	38,900
Hungary	874,242	891,131	131,500	149,436
Italy	2,920,000	2,340,000	378,000	331,200
Poland	2,841,000	2,034,420	491,000	379,249
Sweden	2,028,694	2,005,044	299,440	335,972
Czechoslovakia	4,161,499	3,098,284	697,920	570,430
Yugoslavia	572,720	520,637	68,920	81,760
Turkey	443,000	547,000	72,000	80,575
TOTAL . . .	29,884,532	25,541,656	4,667,227	4,283,108

On the whole, all the market quotations have undergone no noticeable fluctuations, as was, for that matter, expected, production being now, *grosso modo*, on a par with consumption and prices being controlled as far as possible, by national intervention.

* * *

According to the most recent information and estimates based for the greater part on factory data, production of beet-sugar is larger than indicated last month for Germany, Austria, Belgium, Bulgaria, France, Hungary, Lithuania, Poland, Sweden, Czechoslovakia, Yugoslavia and the United States, while it is smaller for Denmark, the Irish Free State, the U. S. S. R., Canada and Turkey. For all the other countries no changes have been communicated.

With these modifications total world production of beet-sugar is 5 % larger than in 1933-34 and 1 % above the five-year average.

E. R.

* * *

Great Britain and Northern Ireland: Some sugar-beet remained to be lifted in England at the beginning of January. The beet delivered during December shows a heavier yield than in previous months as the roots continued to grow right up to the time of lifting, but it is reported that the sugar content is now lower than earlier in the season. It is anticipated that the total production of washed and topped beets will slightly exceed 178 million centals (3,900,000 short tons). In Scotland sugar-beet proved a very good crop both in bulk and in sugar content.

Argentina: According to the most recent estimate production of cane sugar in 1934-35 is about 7,520,000 centals (376,000 short tons) against 6,960,000 (348,000) in 1933-34 and 7,860,000 (393,000) on the average of the five years ending 1932-33; percentages 108.0 and 95.6.

United States. According to the most recent estimate area cultivated to sugarcane in Louisiana this year was about 237,000 acres against 214,000 in 1933 and 182,000 on the average of the five years ending 1932; percentages 110.7 and 130.0. The corresponding production is estimated at about 71,220,000 centals (3,561,000 short tons) against 63,520,000 (3,176,000) and 58,800,000 (2,940,000); percentages 112.1 and 121.1.

Production of cane-sugar in about 4,560,000 centals (228,000 short tons) against 4,100,000 (205,000) in 1933 and 3,580,000 (179,000) on the average of the five years ending 1932; percentages 111.2 and 127.2.

British Guiana: Weather conditions in December were fairly good. Grinding of the autumn crop was practically completed but no estimate of the total production was yet available.

Formosa: Crop condition of cane just planted and of that ready for cutting next spring is fairly good.

India: In the Punjab there was no rain save light showers in December and the first week of January and more moisture was badly needed. Damage was caused by

pyrilla in Jullundur, Ludhiana and Hoshiapur. At the end of this period crop condition was average to good on irrigated lands, and under average to average on unirrigated.

Sugar-beet.

COUNTRIES	AREA					PRODUCTION							
	1934	1933	Average 1928 to 1932	% 1934		1934	1933	Average to 1932	1934	1933	Average to 1932	% 1934	
				1933	Average							1933	Average
1,000 acres						1,000 centals		1,000 short tons					
Germany . .	881	751	1,010	117.2	87.2	229,157	189,133	246,633	11,458	9,457	12,332	121.2	92.9
Austria . .	123	115	90	106.7	136.6	29,573	23,534	19,348	1,479	1,177	967	125.7	152.8
Belgium . .	132	129	140	102.3	94.4	35,428	33,418	37,325	1,771	1,671	1,866	106.0	94.9
Bulgaria . .	4	30	41	14.7	10.8	443	6,527	5,417	22	326	271	6.8	8.2
*Irish Free St.	46	15	13	302.3	363.2	...	4,519	2,792	...	226	140	...	...
Finland . .	7	7	5	105.1	142.2	2,227	1,256	858	111	63	42	177.3	265.8
France . .	679	675	658	100.5	103.2	184,088	164,486	158,188	9,204	8,224	7,909	111.9	116.4
*Engl. & W.	396	364	248	108.9	159.7	...	73,449	46,129	...	3,372	2,306	...	...
Scotland . .	8	2	1	442.0	606.4	1,608	348	166	80	17	8	462.6	968.6
Hungary . .	111	108	156	103.1	70.9	20,127	20,817	27,871	1,006	1,041	1,394	96.7	72.2
Italy . .	221	202	266	109.5	83.1	58,466	47,258	60,858	2,923	2,363	3,043	123.7	96.1
*Latvia . .	37	32	—	115.4	—	7,275	4,101	—	364	205	—	177.4	—
Lithuania . .	10	10	1	100.0	137.9	1,764	1,146	1,290	88	57	64	153.8	136.7
Netherlands .	104	117	126	88.3	82.0	30,424	42,953	39,900	1,520	2,148	1,995	70.8	76.3
*Poland . .	279	245	456	113.9	61.1	...	40,836	86,995	...	2,042	4,350	...	...
*Romania . .	92	107	94	86.2	97.4	...	14,957	15,032	...	748	752	...	...
Sweden . .	124	125	91	98.9	136.4	34,613	40,541	24,287	1,731	2,027	1,214	85.4	142.5
Switzerland .	4	4	3	95.7	117.2	1,543	1,444	964	77	72	48	106.9	160.2
Czechoslov .	393	358	524	109.6	75.0	85,099	64,232	123,719	4,255	3,212	6,186	132.5	68.8
*Yugoslavia .	2) 79	75	128	104.6	61.4	...	11,233	18,575	...	562	929	...	...
Total Europa	2,801	2,633	3,118	106.4	89.8	714,560	637,093	746,804	35,725	31,855	37,339	112.2	95.7
U. S. S. R . .	2,906	2,996	2,722	97.0	106.8	249,000	198,000	216,142	12,500	9,900	10,807	125.6	115.3
Total Europa	5,707	5,629	5,840	101.4	97.7	963,560	835,093	962,946	48,225	41,755	48,146	115.3	100.1
Canada . .	52	46	49	113.0	106.5	8,260	9,140	8,920	413	457	446	90.4	92.6
U. S. A. . .	789	983	717	80.3	110.0	152,540	220,600	162,352	7,627	11,030	8,118	69.1	94.0
*Japan . .	25	25	23	99.4	109.4	...	...	4,158	...	...	208	...	...
Turkey . .	136	57	24	237.6	557.9	9,581	7,672	2,367	479	384	118	124.9	404.8
TOTALS . .	6,684	6,715	6,630	99.5	100.7	1,133,941	1,072,505	1,136,585	56,744	53,624	56,828	105.7	99.8

*) Countries not included in the totals. — 1) Average 1930 to 1932. — 2) Unofficial figure.

In Bihar and Orissa there was light rain in a number of districts during the same period. Crop condition was reported on 3 January as good. Grinding was proceeding.

In Bengal the first part of December had light to moderate rains but in the subsequent period up to 9 January the weather was dry save for light local showers. Crop prospects were good.

In Madras rainfall in December was on the whole below normal and in the fortnight preceding 5 January there was no precipitation. Crop condition was fair save in Bellary, northern Arcot and Malabar, where the crops were suffering from lack of rain.

Indo-China: Harvesting was in progress in November in Tonkin and North Annam, where some plantations suffered from floods. In Central and South Annam growth was very good.

Egypt: Weather was favourable to the maturation of the cane-sugar crop. The early-sown crop has ripened and cutting has begun. The yield is expected to be 5 % above the average. Crop condition on 1 January was 105 against 103 at the same date last year.

Mauritius: Prospects for the coming crop of sugar-cane were satisfactory in December, but the low level of prices was still causing anxiety.

Union of South Africa: November crop condition averaged 10 per cent below normal. Hot weather prevailed during the month and the rainfall was below normal. The locust position was serious.

Production of sugar in 1934-35 is now estimated at 7,060,000 centals (353,000 short tons), 90.2 % of that in 1933-34 and 105.5 % of the average for the five years ending 1932-33.

THE WINE MARKETS IN VARIOUS COUNTRIES DURING THE YEAR 1933-34 AND AT THE BEGINNING OF THE YEAR 1934-35

1. — *Disposal of the 1933 and 1933-34 output.* — Supplies at the opening of the year 1933-34 were about average in most of the viticultural countries

TABLE I. — *World production of wine in 1934, 1933 and preceding years.*
(Million Imperial gallons)

	*) 1934	1933	1932	Quinquennial average 1927-1931	Decennial average 1922-1931	Average 1909-1913
NORTHERN HEMISPHERE:						
France, Algeria, Tunisia, Morocco 1)	2,220	1,548	1,545	1,544	1,579	1,286
Italy 2)	671	727	999	863	908	1,012
Great exporting countries (Spain, Portugal, Greece),	580 to 710	670	630	642	622	448
Danubian countries, exporting (Romania, Yugoslavia, Bulgaria, Hungary)	350	343	384	338	314	(132)
Central European countries importing (Germany, Austria, Switzerland, Czechoslovakia, Luxembourg)	110	70	76	82	77	(62)
<i>Total for the Northern Hemisphere 3)</i>	<i>4,050</i>	<i>3,358</i>	<i>3,634</i>	<i>3,469</i>	<i>3,500</i>	<i>2,940</i>
	1934-35	*) 1933-34	1932-33	1927-28 / 1931-32	1922-23 / 1931-32	1909-10 / 1913-14
SOUTHERN HEMISPHERE:						
Exporting countries (Chile, Australia, Union of South Africa).	...	110	102	97	86	60
Importing countries (Argentina, Brasil, Uruguay) . . . . .	...	230	224	159	150	101
<i>Total for the Southern Hemisphere 4)</i>	...	<i>340</i>	<i>326</i>	<i>256</i>	<i>236</i>	<i>161</i>

*) The figures given in these columns are provisional and partly obtained from rough estimates.

1) French production is the total production and includes undeclared quantities which are assumed to be about 40 million gal. approximately in 1934. — 2) Recent figures of production in Italy are not comparable with those of preceding years; the recent revisions in the land survey result in an increase from 1931 of 20 to 40 million gal. on the estimates based on the old data of area. — 3) Not including production in the U. S. S. R. (99 million gal. in 1929), in North America (40 to 70 million gal.) and in the Asiatic countries (9 to 11 million galls). — 4) Not including Peru (2.7 million gal. in 1928-29) and a few countries of minor importance.

of the northern hemisphere as the small decrease in production shown in the preceding table was generally offset by the carry-over from the plentiful output of the preceding year.

The French group, including France and French territories in North Africa, held normal supplies practically equal to normal consumption requirements. Average prices of southern wines during the year were 17 % below those of the year 1932-33 and more than 32 % below the average of the five preceding years (see tables on page 33) and this decline has stimulated commercial consumption. The latter was considerable and since, further, imports were reduced, producers were able to dispose of a relatively substantial quantity of their supplies, so that the total amount of stocks remaining on producers' and traders' hands have decreased slightly. It is to be noted, however, that the movement was not as satisfactory in Algeria as in the viticultural areas of the home country and that stocks have grown considerably in North Africa.

TABLE II. — *Disposal of the Franco-Algerian Vintage.*

(thousand Imperial gallons)

	1934-35	1933-34	1932-33	Average 1927-28 to 1931-32
<i>Franco-Algerian Supplies:</i>				
Vintage	1) 2,137,850	1,511,170	1,493,300	1,520,620
Stocks in producers hands	114,980	178,470	108,100	90,300
<i>Total</i>	1) 2,252,830	1,639,640	1,601,400	1,610,920
<i>Quantity marketed</i>				
Quantity sold by vine-growers . . . . .	...	1,140,330	1,073,300	1,089,030
Imports 2) . . . . .	...	30,110	48,660	60,450
Increase in commercial stocks 3) . . . . .	...	— 730	— 7,870	— 7,430
<i>Total</i>	...	1,169,710	1,114,090	1,142,050
<i>of which:</i>				
Commercial wine consumption (taxed) 4) . . . . .	...	1,090,680	1,076,520	1,064,830
Exports 4) 5) . . . . .	...	17,910	17,640	29,960
<i>Consumption on farms (untaxed) 6)</i>	...	384,320	399,630	418,790
<i>Total consumption</i>	...	1,554,030	1,513,720	1,560,840
<i>Proportion:</i>				
of total consumption to supplies . . . . .	...	94.7	94.5	96.9
of quantity marketed to supplies . . . . .	...	71.5	69.6	70.9
of quantity marketed to total consumption . . . . .	...	75.5	73.6	73.2

1) Excluding quantities not declared to the collection bureaux which are consumed on farms and which vary around 50,000 thousand gallons. — 2) Including imports whether free or not, from Tunisia. — 3) This increase, which is equivalent to a decrease in the quantity actually marketed, is preceded by a - sign. — 4) The difference between the total of these two quantities and the quantity marketed is the quantity absorbed by distilling and vinegar factories etc. — 5) Including exports from Algeria to countries other than France. — 6) This quantity is calculated from the difference between the proportion of total supplies absorbed (supplies less stocks existing at the end of the year) and the quantity marketed by vine-growers.

In the case of other countries it is much more difficult to determine the disposal of output and the magnitude of consumption, statistics being either

unavailable or very incomplete. The course of the year consequently can be determined statistically only from rough data.

In the case of Italy, the available figures indicate that, at least, up to the year 1933-34, commercial consumption was expanding at a slow but steady rate. The total quantity of wines on which consumption tax was levied grew from 400.4 million Imperial gallons (480.8 million American gallons) in 1931 to 422.4 (507.2) million gallons in 1932. Some partial statistics covering only 225 communes or a little less than half the total commercial consumption show the following trend: 215.6 (258.9) million gallons in 1930-31, 222.2 (266.8) million gallons in 1931-32, 224.4 (269.5) million gallons in 1932-33. The monthly statistics of consumption duty were modified as from 1 January 1934 and the figures are no longer comparable with those above.

Notwithstanding the large stocks carried over from the plentiful crop of the previous year, the available supplies in Italy at the beginning of 1933-34 were comparatively small and only just sufficient to meet normal internal requirements. Stocks showed practically no change during the years 1932-33 and 1933-34, and the average consumption in these two years seems to have been about normal that is, at a figure of 860 (1,030) million gallons. Stocks on hand at the end of the year 1933-34 were estimated at 130 (160) million gallons.

In the case of the three important exporting countries, Spain, Portugal and Greece, there are no means of ascertaining exactly how the output has been absorbed. In a general way, however, absorption seems to have been somewhat unsatisfactory, a view which is supported by the volume of supplies and by the restriction of exports.

Commercial stocks in Spain at the beginning of the year 1933-34 appeared to be rather considerable and sufficient to offset the decrease in output and adequate, at least, to satisfy normal requirements. In spite of a considerable drop in the prices received by producers, domestic consumption appeared to decline while exports underwent a further contraction. Stocks at the end of the year seemed to have grown and were, in any case, at a fairly considerable figure.

In the case of Portugal and Greece, it is only necessary to point out that the output was respectively 50 % and 60 % greater than the averages of the five preceding years and that exports were rather lower. Whatever movements may have occurred in internal consumption, it is certain that a relatively substantial proportion of the output has not been absorbed.

The statistical situation of the year 1933-34 in the Danubian countries was undoubtedly better than it was in the preceding year, notwithstanding the rather large stocks carried over from the very plentiful crop of 1932. Domestic consumption seems rather to have increased and exports, though relatively small, showed practically no change. The disposal of the crop, though not good, has thus been comparatively satisfactory. Stocks were still rather large at the end of the year in Bulgaria where the output of the year was relatively plentiful. In Rumania, which neither imports nor exports wines and where production was nearly average, stocks carried over from former years appear to have been reduced somewhat. In Hungary and Yugoslavia they appeared to be comparatively low and practically normal.

In the importing countries of Central Europe, domestic consumption, in spite of a decline in Germany, Austria, and Switzerland, was sufficient to absorb a low output falling short by 12.5 (14.8) million gallons, or 15 %, of the average of the five years previous to 1933.

No information is available on the position in the U. S. S. R. where, moreover, as trade is not free, statistical comparisons have little value.

The wine trade in the United States seems to have experienced some difficulty in disposing of the rather plentiful output of 1933 owing to the fact that wine consumption has not developed appreciably as a result of the repeal of the Volstead Law in the majority of the States.

Finally, in the southern hemisphere, statistics indicate increasing overproduction both in the exporting countries and in the important viticultural countries which, like Argentina, were, until some time ago, importers of wine.

To sum up, the disposal of the output of 1933 was satisfactory in the importing countries of the northern hemisphere, with the exception of the United States, in Italy and in some of the exporting countries of minor importance such as Hungary and Yugoslavia. It was somewhat unsatisfactory, on the other hand, in most of the exporting countries in which Algeria, Tunisia, and Morocco, must be included, and in the southern hemisphere as a whole.

Trade during the year was quiet everywhere, even in the first of the two groups.

2. - *Wine prices during the year 1933-34.* — The following table shows the average prices of a type of wine available in the chief market of each of the three great viticultural countries, expressed in national currencies and in gold francs together with the average of each of the years 1926-27 to 1933-34.

The slight rise shown at the beginning of the season in wines from the South of France was the result of the excellent quality of these wines and of the increase noted in consumption. A slight depression followed, probably due to a certain slackening in taxed consumption, to the lack of interest shown on Algerian markets and to various psychological causes. During the summer, the apprehensions regarding the coming crop led to a more considerable rise than the first, but as the prospects of exceptional yields became more and more clearly defined, prices underwent a rapid and substantial fall.

The appreciable fall which occurred in Italian markets after February was the outcome not of the statistical position of the year, but of factors which are difficult to determine. The official prices published in the table above show no improvement at the end of the year with the approach of a vintage promising to be extremely reduced in magnitude. This anomaly, however, is more apparent than real. It is the outcome partly of the Italian Government's policy of price stabilization and partly of the fact that the old wines remaining were scarce and business was limited. Actually, prices for wines of the new vintage prevailing at the end of the season in August and September were tending upwards, slowly at first but later comparatively quickly without, however, going beyond the average level of the preceding year.

Prices in Spain weakened slowly but steadily throughout the year at the end of which they had sunk nearly to the record low level of the first half of 1930.

TABLE III. — *Prices of ordinary wine in France, Algeria, Italy and Spain.*

I. — *Monthly Prices.*

MONTH	MONTPELLIER ordin. red in fcs. per hl.					ORAN ord. red in fcs. per alc. gr. and hl.			
	1933-34 10 ⁰ .5	1932-33		1931-32	1930-31	1933-34	1932-33	1931-32	1930-31
		1) 10 ⁰ .5	8 ⁰ .5	10 ⁰ .5	10 ⁰				
October	102	154	125	107	192	10.00	11.75	8.00	16.00
November	109	130	105	96	190	11.00	13.75	8.25	15.00
December	110	132	107	99	182	n. q.	13.75	7.25	15.00
January	110	140	113	100	177	n. q.	14.15	7.75	n. q.
February	106	138	112	100	162	n. q.	15.25	7.25	13.50
March	103	131	106	101	162	7.00	14.35	7.60	13.25
April	98	132	107	96	164	7.00	13.50	7.85	13.25
May	102	131	106	91	165	7.00	13.70	8.00	13.25
June	113	120	97	108	181	7.00	n. q.	8.75	13.00
July	118	106	86	139	184	6.50	n. q.	n. q.	16.60
August	101	94	76	147	164	5.95	n. q.	13.25	16.25
September	12) 100 13) 71	96	78	144	117	2) 5.57	n. q.	12.35	12.00

MONTH	BARI ordinary 11 ⁰ lire per hl.				VALENCIA « Tinto Utiel » per alc. gr. hl.			
	1933-34	1932-33	1931-32	1930-31	1933-34	1932-33	1931-32	1930-31
October	65	80	105	124	2.00	2.30	2.00	2.77
November	65	75	85	120	2.00	2.40	2.00	2.65
December	65	70	80	119	2.00	2.30	1.87	2.55
January	65	67	80	115	2.00	2.45	1.87	2.55
February	60	65	80	111	1.95	2.95	1.80	2.45
March	53	65	80	107	1.83	2.60	1.90	2.35
April	53	65	80	115	1.80	2.75	1.75	2.25
May	53	65	80	100	1.86	3.00	1.65	2.35
June	53	65	80	110	1.75	3.10	1.60	2.55
July	53	65	80	96	1.75	3.05	2.07	2.75
August	53	63	80	96	1.75	3.00	1.97	2.55
September	53	65	80	96	2) 1.75	2.05	1.95	2.20

2. — *Yearly averages.*

MARKETS AND SPECIFICATION	1933-34	1932-33	1931-32	1930-31	1929-30	1928-29	1927-28	1926-27
<i>Original Prices in National Currencies</i>								
Montpellier, red. 10 ⁰ frs. per hl.	1) 99.2	1) 119.4	1) 105.4	170.0	112.5	151.1	191.4	234.2
Oran, ord. red in fcs. per alc. gr. and hl.	4) 8.50	5) 13.76	8.66	14.51	8.80	13.48	15.90	18.30
Bari, ord., 11 ⁰ lire per hl.	53.6	67.5	82.5	109.1	121.3	137.8	140.3	141.3
Valencia, « Tinto Utiel » per alc. gr. and hl.	1.86	2.66	1.86	2.50	1.79	2.26	2.57	2.89
<i>Prices in gold francs per degree and hectolitre</i>								
Montpellier, ordinary red.	2.01	2.43	2.53	3.45	2.19	3.14	3.89	4.75
Oran, ordinary red.	4) 1.70	5) 2.80	1.78	2.99	1.81	2.65	3.24	3.71
Bari, ordinary.	1.40	1.65	2.00	2.50	3.01	3.42	3.51	3.16
Valencia « Tinto Utiel »	0.79	1.14	0.79	1.28	1.15	1.79	2.24	2.97

n. q.: No quotation during the month.

1) Quotations based on prices actually ruling for ordinary wines the degree of which was only 8.5 in 1932-33, and 10.5 in 1931-32 and 1933-34. — 2) First week of the month only. — 3) New wines, in preparation; last three weeks. — 4) Nine months only. — 5) First eight months of the year only; for the same period, the average prices in gold francs, per degree and per hectolitre, were 2.63 in Montpellier, 1.68 in Bari and 1.24 in Valencia.

Prices in the Danubian countries kept fairly steady for the greater part of the year, but they sagged towards the end, particularly in Bulgaria and Hungary. In the Central European importing countries prices were fairly firm, with, however, a slight slackening in Switzerland towards the end of the year.

Some weakness was to be observed in markets in the United States.

The year 1933-34, as a whole, was characterised by a further general decline in prices on the majority of markets, particularly affecting French and North African wines.

Prices showed rises nowhere except in Italy and even here the rise was comparatively slight.

3. — *The situation of the wine trade in the chief viticultural countries of the northern hemisphere during the year 1933-34.* — The tendencies discernible at the end of last season as they bear on the statistical position of the current year, which was analysed in the *Crop Report* of last December were, on the whole, confirmed and accentuated during the first three months, October to December.

In the Franco-Algerian group, the prices of ordinary red wine fell to 5.50 francs per degree-hectolitre on the chief markets of the South of France, to 4.25-5 francs per degree-hectolitre on the Oran market, or to less than half the prices prevailing at the beginning of the year 1933-34. Commercial consumption of the three months is slightly greater in Algeria but appreciably smaller in France where it is less than consumption during the corresponding period of the five preceding years and is smaller than that of the year 1933-34 by the substantial margin of about 10 million Imperial (12 million American) gallons. Commercial stocks, though a little smaller in December, are very high at about 317 million (411 million) gallons, the maximum hitherto recorded for this period of the year. These are two obstacles to the movement of the Franco-Algerian crop.

Supplies coming from producers are, however, fairly satisfactory on the whole, though very irregular in the various districts and especially low in the South of France. If they are compared, not with total supplies, in comparison with which they appear to be extremely small, but with the legitimate quantities available as obtained after subtraction of the 330 million Imperial gallons (400 million American gallons) which would have to be absorbed by compulsory distillation and of the 110 (130) million gallons "segregated" in producers' hands, the quantity forthcoming from producers to be placed on the market appears to be normal. In fact, a slight increase of prices was recorded in Algeria at the end of December after the publication of the new law on the minimum degree of wines for consumption, while a rise was also noticeable in France in the first half of January after the promulgation of the law providing for the improvement of the wine market. The extent of the rise was about 10 % and prices about 20 January were firm, but trading remained small in amount. It must be remembered that though the 440 million Imperial gallons (530 million American gallons) referred to above are actually withdrawn from the market, provisionally or finally, the quantity legally to be marketed remains about 310 million (370 million) gallons in excess of normal consumption requirements. Moreover, the final text of the law for the improvement of the wine market omits the mea-

asures contemplated in the previous form for the removal of vines. The scope of the measure for the prevention of overproduction in the future is thus limited.

In Italy the very sound statistical situation of the market at first supported the rising tendency which was noticeable at the end of last season. The average price in October at Bari was 73 lire per hectolitre for ordinary wine of 11°; a slightly more pronounced rise followed in November but in December a fairly appreciable weakening was noted and the average price fell to 6.50 lire per degree-hectolitre. The market became firm again in January with a rising tendency. Average prices at the beginning of the season were a little below those of the beginning of the year 1932-33 when supplies, however, were comparatively plentiful, but they were still below those of previous seasons. It should be noted, in this connection, that the economic policy of the Italian Government tends to eliminate sudden changes and violent fluctuations in prices. It is, therefore, probable that prices will continue fairly firm with a rising tendency until the prospects for the coming vintage are known. Crop movement seems to be proceeding regularly but activity on the wine markets is not great in extent.

No new element has entered the situation of the wine trade in Spain. In spite of some views maintaining that there has been a slight local recovery, consumption seems rather to be falling off. In any case, it remains very low. Exports remain low, and commercial agreements resulting from the negotiations with France, Germany, Argentina and Romania will have to be arrived at before they can recover. Prices are nearly stationary but there is a weakening tendency. On the whole after a slight rise in October they sank appreciably in November and subsequently remained at the level of 1.475 peseta per degree-hectolitre for ordinary wine at Valencia. This is much below the minimum reached in the summer of 1932. To lighten the market the government has decided to purchase 6,049,000 Imperial gallons (7,265,000 American gallons) of wine alcohol from vine cultivators to be used for fuel and thus remove nearly 40 million Imperial gallons (50 million American gallons) from the market.

In the Danubian countries, owing to the varying magnitude of the crop, the situation varies according to the country. The size of the crop in Romania has resulted in a certain weakening in the market which, however, is modified by the excellent quality of the new wines. In Hungary also, notwithstanding a comparatively poor crop, prices have fallen somewhat. The outcome of negotiations with Italy and Austria, which together with Czechoslovakia, may absorb certain quantities of Hungarian wines, is being awaited. In Yugoslavia, on the other hand, the situation is firm with even a tendency to rise and markets have enjoyed some activity. On the whole, the situation of the wine trade in these countries is fairly satisfactory.

Turning to the Central European group, business is quiet in Germany where the vintage seems, however, to be moving normally. Prices of ordinary wines, which tend to be about 50 to 65 Reichsmarks per hectolitre are, on the whole, about 10 % below those ruling at the beginning of last season. Business in Austria is slack owing to the frequently unsatisfactory quality of the wines of the last vintage. Prices are fairly firm with, however, a weakening tendency. The new wines in Switzerland are of excellent quality but plentiful in amount and

prices are stabilised at figures about half those prevailing at the beginning of the year 1933-34, that is, about 50-70 Swiss francs per hectolitre for Valais wines. Consumption seems to be increasing. In Czechoslovakia the small quantity and excellent quality of the last vintage have resulted in a rising tendency.

If this survey is studied with a view to discovering some indications of the international trade situation, it may be said that conditions are fairly favourable for the export of wines from Spain, Portugal, France, Algeria and Greece, having regard to the very low wine prices ruling in these countries and to some extent, for those of Hungary and Yugoslavia. The reduced vintage and, in some cases, the level of prices would facilitate the import of foreign wines into Italy, Czechoslovakia and Austria. On the other hand, the markets in Germany and Switzerland are in a position to absorb only a reduced quantity of foreign wines.

P. DE V.

VINES

Austria: Condition of vines on 1 January was quoted at 1.5 against 1.9 on 1 December and 2.2 on 1 January 1934.

France: The figures of the vintage declarations given in the table on page 37 are again about 50 million Imperial gallons (60 million American gallons) greater than the last official forecasts, and they are nearly 130 million (156 million) gallons more than the previous highest vintage declarations obtained in 1922. It should be pointed out, however, that the total production in 1922, after account is taken of quantities not declared, was 1,689 million (2,028 million) gallons and that production this year probably will hardly exceed this figure. It is, nevertheless, with that of 1922, the largest obtained since 1870, when viticultural statistics first appeared. The areas which have yielded most abundantly are those in the South, particularly the *départements* of Var, Vaucluse, and Bouches-du-Rhône, those in the South-West, particularly Gironde, and Bordelais, and those in the East, Champagne, Lorraine, Alsace and Jura. Production in these areas reaches an absolute maximum this year, while Charentes, the Loire valley, Burgundy and Côtes du Rhône have an output below that of 1922.

The unit yield this year for the whole of France is 453 Imperial gallons (543 American gallons) per acre. In 1933 it was 311 (373) gallons per acre and the average yield of the five preceding years was 337 (405) gallons. The yield this year is distinctly above that of 1922, the maximum hitherto obtained.

The increase in the area in production which is shown in the vintage declarations is probably one in appearance only. It arises from the fact that in a bumper year the number of declarations is abnormally high. Many small cultivators, who, in a normal year, merely produce just enough for their needs, this year have a surplus, which they intend to market and for which, for this purpose, they must make a declaration. The number declaring this year is, in fact, 174,000, or nearly 12 %, greater than last year. It is considerably above those of all former years. If the figures of area in production declared in June, which do not take account of vines pulled up in the spring, are taken into consideration, the area bearing is, on the contrary, shown to be slightly smaller by about 34,000 acres. It is possible that the final figures will reveal a greater reduction in the area bearing since the vines pulled up seem to have been fairly considerable.

The stocks remaining in producers' hands at the time of the vintage were 80 million. Imperial gallons (96 million American gallons), a low figure compared with those of previous years. A small proportion of this total, barely amounting to 3,826 (4,594) thousand gallons consists of immovable stocks covered by the "segregation" law. A small fraction of the must amounting to 5,063,000 (6,008,000) gallons has evaporated after concentration during the vintage.

Vines.

COUNTRIES	AREA					PRODUCTION OF WINE									
	1934	1933	Average 1928 to 1932	% 1934		1934	1933	Average 1928 to 1932	1934	1933	Average 1928 to 1932	% 1934			
				1933	Average							1933	Average		
														= 100	= 100
1,000 acres					1,000 Imperial gallons			1,000 Amer. gallons			= 100 = 100				
*Germany 1)	209	206	203	101.6	103.2	...	39,563	50,362	...	47,512	60,480	...	...
Austria 2)	67	64	75	103.6	89.3	17,356	20,456	22,055	20,843	24,566	26,486	84.8	78.7		
Bulgaria 1) 2)	225	217	193	103.6	116.4	67,067	52,539	40,903	80,541	63,095	49,121	127.7	164.0		
Spain 1) 2)	...	...	3,314	...	...	449,624	434,754	464,465	539,958	522,100	557,781	103.4	96.8
France 2) s)	3,654	3,514	3,504	104.0	104.3	1,652,976	1,093,077	1,180,915	1,985,075	1,312,688	1,418,173	151.2	140.0		
Greece 1) 2)	371	352	307	105.4	120.7	78,122	85,053	59,793	93,817	102,141	71,806	91.9	130.7		
Hungary 1)	519	520	533	99.8	97.5	55,690	67,828	75,013	66,878	81,455	90,084	82.1	74.2		
Hungary 1) u)	2,446	2,435	2,171	100.4	112.7	...	...	...	...	...	...	...	...
Italy 1) m)	7,282	7,291	8,116	99.9	89.7	672,008	726,682	906,076	807,021	872,679	1,088,116	92.5	74.2		
Luxemb. 1) 2)	3	3	3	100.0	82.4	3,080	1,246	1,337	3,698	1,497	1,606	247.1	230.3		
*Romania 2)	675	675	609	100.0	110.8	...	165,289	163,319	...	198,497	196,132	...	...
Switzerland.	33	33	32	100.0	101.7	17,158	5,279	12,493	20,605	6,340	15,003	325.0	137.3		
Czechoslov.	52	49	44	106.1	117.4	4,466	7,428	8,408	5,363	8,920	10,097	60.1	53.1		
Total Eur. §)	...	...	...	...	...	2,952,189	2,430,200	2,707,307	3,545,310	2,918,452	3,251,233	121.5	109.0
*Syria & Leb.	129	122	121	105.5	106.7	—	—	—	—	—	—	—	—		
Algeria 2) .	958	922	683	103.9	140.2	484,887	368,040	327,376	582,306	441,983	393,150	131.7	148.1		
French Morocco 2)	30	24	15	128.1	204.5	12,573	9,833	4,913	15,099	11,808	5,900	127.9	255.9		
*Tunis . . .	125	125	99	99.8	126.6	...	31,237	23,910	...	37,512	28,714	...	...
Total Africa	988	946	698	104.4	141.3	497,460	377,873	332,289	597,405	453,791	399,050	131.7	149.7		
GR. TOTAL §)	...	...	...	...	...	3,449,649	2,808,073	3,039,596	4,142,715	3,372,243	3,650,283	122.8	113.5

*) Countries not included in the totals. — §) For the totals, the figures of must production are converted into their equivalent of wine, according to a coefficient of 9/10.

u) Unmixed crop. — m) Mixed crop. — s) Areas and productions declared to the tax-offices. In preceding years the undeclared area was about 270,000 acres and the undeclared production was about 50,000 Imp. gal. or 60,000 Am. gal. — 1) Production of must. — 2) Area bearing. — 3) Provisional approximate date. — 4) Including the quantity obtained from native vines grown on trellis in 1933 (990,000 Imperial gallons or 1,200,000 American gallons).

The mild and wet weather which prevailed throughout December and during the first ten days of January was favourable to the development of vines. The latter is too forward and a quick budding, which would increase the danger from spring frosts, was feared. Temperature dropped considerably about 10 January and there were frosts, but soon the weather again became abnormally mild and wet. Pruning is proceeding in satisfactory conditions, but work in some areas was delayed by excessive rain. On 15 January the condition of the vineyards was satisfactory.

Hungary. According to the most recent estimate production of grapes sold fresh in 1934 was about 586,500 centals against 568,100 in 1933 and 626,800 on the average of the five years ending 1932; percentages 103.2 and 93.6.

Argentina. The frosts of October caused rather a serious loss in the east and centre of Mendoza and in San Juan, which are the most important viticultural areas. On the other hand at the beginning of December, in the period of budding and when the early stocks were beginning to flower, the weather was very favourable to the development of cryptogamic diseases in Mendoza and made repeated treatment necessary; in San Juan violent winds and rains at the time of flowering and tying increased the damage caused by the frosts. In the other areas, which are of less importance, particularly in Rio Negro and Chubut, crop prospects were excellent.

On the whole it was expected at the beginning of December that there would be an appreciable decline in Argentine production in 1934-35; though distinctly below last year's level it might approach the five year average, which was 128 (132) millions gallons and relatively low because of the exceptionally bad crop of 1931-32.

Uruguay. According to information from private sources, the crop which previously had a very good appearance, underwent, after the beginning of November, a serious attack of mildew which caused considerable damage. It is anticipated that notwithstanding the plentiful crop of last year, supplies at the beginning of the coming season will be thereby appreciably reduced.

Algeria. Crop declarations give a production figure still larger than the last official estimates. The unit-yield, which is nearly 506 (607) gallons per acre, is, after that of 557 (657) obtained in 1925, the highest of the post-war period. The area shows a distinct increase on that of last year.

The unproductive area, representing the plantings made in the last two years, shows however, a heavy decrease; from an average of 72,000 acres in 1928-32 it fell to 50,600 in 1932 and in 1934 was no more than 37,000 acres according to the provisional and approximate estimate of November; figures indicate, if not cessation at least a slowing-down of new planting. The number of growers that have declared crops is much greater than in previous years: from 10,700 in 1930 it rose to 16,100 in 1933 and 18,000 in 1934; the average area of each shows an appreciable decline, from 62.7 acres in 1930 to 57.3 in 1933 and 53.1 in 1934. These figures show that the extension of the Algerian vineyards is due to the growth of small holdings; in fact the relation of the increase in productive area to the growth in number of crops declared from 1933 to 1934 would indicate an average area of less than 20 acres per fresh grower declaring, while from 1930 to 1933 this average area was about 47 acres.

Supplies, including stocks in growers hands, for the current season amount to 520 (624) million gallons, an increase of 134 (161) millions on those of 1933-34 and of 185 (222) millions or 5.5 % on the five-year average; they are 103 (124) million or 25 % above the preceding maximum of 1932. The stocks remaining on the holdings, which in previous years had never attained 15 (18) millions, are this year 35 (42) millions; of this total scarcely 4 (5) million gallons have been immobilized according to the so-called "blocage" law. On the other hand commercial stocks at the beginning of the season were, with 26 (32) million gallons, appreciably smaller than those of the last five years.

It should be noted that the Algerian consumption is increasing rapidly; commercial consumption and consumption on the holdings together in 1933-34 exceeded 53 (63) million gallons though in 1932-33 it was only 42 (50) million and on the five year average only 39 (47) million.

The very low prices may cause an increase in commercial consumption and in addition, the fixing of the minimum degree of wines allowed to be sold may stimulate consumption on the holdings; finally, compulsory distillation, under the recent wine law, will absorb part of the surplus. It is probable that in these conditions the largest part of Algerian supplies will be absorbed by Franco-Algerian consumption but a fairly appreciable increase in stocks remaining at the end of the season is to be expected.

Lignification has been in general satisfactory. The fine weather favoured cultivation and pruning.

French Morocco: December was fine with a fairly considerable fall in temperature at the beginning of the month in the interior, fairly mild conditions in coastal districts and with rainfall rather below normal. Pruning is proceeding in the vineyards in central districts.

Tunisia: The abundant and frequent rains of December considerably slowed down pruning and cultivation in the Bizerta district; in the Tunis district cultivations were carried out in due time and pruning went on to the end of the month.

Australia: The 1933-34 crop is now estimated to have been 13,700,000 Imperial gallons (16,500,000 American gallons) against 16,414,000 Imp. gal. (19,712,000 Am. gal.) in 1932-33 and 15,848,000 Imp. gal. (19,032,000 Am. gal.) in the five years ending 1931-32. Percentages: 83.3 and 86.3.

At the middle of December, it was reported that the condition of vines in South Australia was on the whole excellent; damage from frosts and cryptogamic diseases was insignificant. It was confirmed, however that serious damage was caused to the vines in Victoria.

For the Commonwealth as a whole, prospects for the new crop were good at the end of December.

OLIVES IN 1934-35

Production. — The Institute now possesses information relating to nearly all the countries which grow olives. The results of the present year may be summarised as follows.

In Spain the severity of last winter seemed to indicate at the beginning of spring that a very poor crop would be obtained, but the very favourable summer weather and the autumn rains, which, though late, were beneficial, enabled the crop to recover somewhat. The official estimates of production, however, show that the results are not only below those of last year but also below the average, some areas in the east suffering especially from the drought. Other areas, e. g. Andalusia, suffered not inconsiderable damage from olive fly.

The condition of olives in Italy was normal throughout the growing season, and, except in some cases of drought, the year was good and normal results were obtained. Production this year compared with last is substantially lower in Liguria and Calabria, but appreciably higher in Tuscany and practically unchanged in Apulia, which is the most important area of production. These variations, on the whole, balance each other and total production as at present known is equal to the average. Oil production, however, has not yet been offi-

cially estimated, but, if a normal oil yield is assumed, it may be expected to be practically equivalent to the average for the five years ending 1932-33.

Production of olives has been particularly large in Greece, exceeding the already large figure of last year and the average; these results have been obtained thanks principally to the good weather that prevailed in the principal areas of production (Corfu, Mytilene, Crete) and to the absence of harmful insects. The total has scarcely been influenced by the torrential rains and hail in the early summer in some districts in the centre of the country.

Olive and Olive-oil Production.

COUNTRIES	ARFA					ENGLISH MEASURES			AMERICAN MEASURES			% 1934/35		
	1934/35	1933/34	Aver. 1928/29 to 1932/33	% 1934/35		1934/35	1933/34	Aver. 1928/29 to 1932/33	1934/35	1933/34	Average 1928/29 to 1932/33	1933/ 1934	Aver- age	
				1933/ 1934 = 100	Aver. = 100									1933/ 1934 = 100	Aver. = 100
			Thousand acres													Thousand centals	Thous- ( s ) pounds and ( t ) Amer. gallons
Spain . .	...	4,698	4,585	...	...	(s) 26,811	36,314	37,800	2,681,149	3,631,358	3,780,002	73.8	70.9
France . .	—	—	—	—	—	(t) 5,031	6,838	7,348	66,109	89,856	96,551	73.6	68.5	
Greece 1) .	—	—	—	—	—	s) 1,295	589	877	129,522	58,875	87,737	220.0	147.6	
*Italy (a)	1,991	1,991	1,667	100.0	119.5	(s) 617	540	783	61,730	53,982	78,324	114.4	78.8	
(b)	3,146	3,145	3,781	100.1	83.2	(t) 2,425	2,323	2,270	31,867	30,521	29,833	104.4	106.8	
Portugal .	—	—	—	—	—	s) 28,479	25,843	29,214	2,847,937	2,584,344	2,921,439	110.2	97.5	
—	—	—	—	—	—	(t) ...	3,611	4,734	47,450	62,206	...	...	...
Syria and Lebanon	194	192	187	101.1	103.6	(s) 1,098	1,092	1,274	109,791	109,194	127,438	100.5	86.2	
—	—	—	—	—	—	(t) 170	349	239	2,231	4,584	3,140	48.7	71.1	
Algeria . .	...	168 2)	200	...	...	(s) 292 3)	214 3)	276 3)	29,211	21,366 3)	27,650	136.7	105.6
Tunis . .	—	—	—	—	—	(t) 2,756 4)	1,587 4)	3,417 4)	275,579	158,678 4)	341,713	173.7	80.6	
TOTALS . .	—	—	—	—	—	(s) 303	183	442	3,980	2,408	5,804	165.3	68.6	
	—	—	—	—	—	(t) 1,323	1,323	955	17,382	17,382	12,544	100.0	138.6	
	—	—	—	—	—	(t) 9,788	12,668	12,236	128,609	166,462	160,775	77.3	80.0	

*) Country not included in the totals. — a) Pure crop. — b) Mixed crop. — s) Olives. — t) Oil. — 1) Olive production refers to table olives. — 2) Year 1932-33. — 3) Olives for preserving. — 4) Olives for oil.

In France production of olives has been very large and much above the average. As the olives have in general, been very small and therefore unsuitable for direct consumption it is expected that a larger proportion will be utilized for oil, of which the production is accordingly considered to be slightly larger than in the past few seasons.

In Portugal the olive oil season was distinctly unfavourable; the spring found the trees in good condition but the heat and drought of summer greatly hindered vegetation and caused much shedding. Official estimates indicate a production of oil just slightly over half the average and about two-thirds below the very large production of the previous season.

As regards the Asiatic countries it is known that in Palestine considerable losses were experienced in the summer and forecasts, which at the end of May

were good in the north and satisfactory in the south, worsened as the season advanced; in November yields were regarded as very small, with few exceptions not more than 33 % of normal production; on the other hand yield of oil appears high. In Syria and Lebanon the situation was normal and conditions in general favourable; fruit formation was favoured and crop condition was considered better than last year.

The summer was not very favourable in North Africa. In Algeria flowering took place in good conditions but fruit was late in forming; the scirocco caused fairly appreciable damage and caused shedding; there was a subsequent amelioration thanks to the very favourable autumn rains.

In Tunisia the hot winds caused less damage and at the end of the summer the situation could be regarded as good in all districts; a further amelioration followed the good rains of October. In Morocco the heat and violent winds of June and July caused considerable shedding but the crop was able to recover and production is on the whole considered fairly good. In Cyrenaica the weather was generally favourable.

Summing up, on the basis of the most recent statistical and other information that has reached the Institute, it may be said that world production of olive-oil in 1934-35 will be about 14 $\frac{1}{2}$ million centals (190 million gallons) against a little more than 15 (203) million in the previous season and the five-year average of 18 (232) million.

Trade. — In the following survey are published data for the most important trade movements of olive oil in the first ten months of 1934; these figures are compared with those of the corresponding date in 1933 and 1934.

Export of edible olive-oil from Spain.

Destination	Jan.-Oct. 1934		Jan.-Oct. 1933		Jan.-Oct. 1932	
	centals	gallons	centals	gallons	centals	gallons
United States	248,823	3,269,677	218,825	2,875,481	246,314	3,236,709
Argentina	70,240	922,986	96,168	1,263,703	235,461	3,094,089
Italy	125,380	1,647,556	3,208	42,151	137,829	1,811,150
Cuba	116,537	1,531,357	115,646	1,519,653	109,797	1,442,796
United Kingdom . . .	70,482	926,173	29,822	391,878	48,068	631,634
Other countries . . .	378,403	4,972,421	348,433	4,578,602	407,259	5,351,610
Total . . .	1,009,865	13,270,170	812,102	10,671,468	1,184,728	15,567,988
In receptacles weighing over 20 kilograms .	710,182	9,332,183	510,989	6,714,681	696,628	9,154,075
In receptacles weighing 20 kilograms and un- der	299,682	3,937,987	301,113	3,956,789	488,101	6,413,913

The partial figures indicate the serious obstacles met in the consuming markets by olive oil in small receptacles and destined for immediate use as food; Spanish exports in large receptacles to the United States, for example,

represented from January to October, about 80 % of the total Spanish exports to that country, have, as will be seen, maintained a fairly good level. The decrease in exports to Argentina is particularly noticeable while exports to several other countries of South America are on the whole equal to or slightly larger than those of preceding years.

As regards Italy a severe fall is noted in the olive-oil export; the quantity exported in the period from January to October 1934 is only in fact, about 70 % and 55 % of that in the corresponding periods of 1933 and 1932. This heavy diminution, besides being due to the well-known difficulties of a general character, finds its explanation in the decrease in olive-oil exports for refining.

Exports of olive oil from Italy.

	Jan.-Oct. 1934		Jan.-Oct. 1933		Jan.-Oct. 1932	
	centals	gallons	centals	gallons	centals	gallons
Washed or in sulphur . . .	167,464	2,200,566	212,835	2,796,770	231,151	3,037,453
Of which to U. S. A. . . .	113,587	1,492,595	146,471	1,924,713	169,373	2,225,654
Edible	308,097	4,048,566	479,132	6,296,063	639,261	8,400,246
Of which:						
to Argentina	120,170	1,579,100	215,042	2,825,769	299,148	3,930,976
to the U. S. A.	76,201	1,001,321	105,095	1,381,003	188,948	2,482,879
Total . . .	475,561	6,249,132	691,967	9,092,833	870,412	11,437,699

Imports of edible olive-oil into Italy.

Total . . .	552,549	7,260,795	731,860	3,617,046	721,229	9,477,352
Of which temporary imports for refining	429,255	5,640,645	701,447	9,217,404	690,755	9,076,899
The principal sources are as follows:						
Greece	10,648	139,925	181,245	2,381,658	275,638	3,622,040
Spain	64,419	846,505	3,576	46,989	213,148	2,800,883
Turkey	87,209	1,145,969	156,511	2,056,642	12,860	168,982
Tunisia	349,875	4,597,549	365,907	4,808,219	99,850	1,312,083

Another important factor must be taken into account, namely, the smallness of olive-oil production in Italy in 1933-34. If, as is generally estimated, Italian consumption oscillates around 11 pounds (1 gallon) per head, the normal demand of that country should not be less than 4 million centals (58 million gallons) while the 1933-34 production was 3.6 million centals (47.4 million gallons); on the other hand stocks in that country at the end of 1933 were reduced.

Exports of olive oil from Tunisia in the first nine months of 1934 show a considerable contraction with respect to those of the corresponding period of the preceding year but remained much above those of 1932. Those of Greece, of which the relative statistical data are officially known only for the period from January to July, also indicate a very great reduction with respect to January-July 1933, shipments to Italy having especially fallen.

Total imports of olive oil into the United States in the first ten months of 1934 underwent a severe contraction with respect to the same period in the preceding biennium; this contraction is particularly serious for edible olive oils, which certainly have to meet on that market severe competition from other cheaper vegetal oils; sulphured olive oils used as raw material in various industries, amongst which that of soap has great importance, and other non-edible olive oils used principally as lubricants, have undergone a much smaller decline.

Imports of olive-oil into the United States.

	Jan.-Oct. 1934		Jan.-Oct. 1933		Jan.-Oct. 1932	
	centals	gallons	centals	gallons	centals	gallons
Edible olive oil . . .	475,492	6,248,234	659,993	8,672,680	638,165	8,385,847
Sulphured olive oil. .	328,219	4,312,976	386,253	5,075,583	398,436	5,235,672
Other non-edible olive oils	83,090	1,091,853	116,477	1,530,575	105,476	1,386,015
Totals . . .	886,801	11,653,063	1,162,723	15,278,838	1,142,077	15,007,534

United States production of olive oil represents only a very small proportion of that country's requirements but in the last few years the sale in small packages of oil imported in large packages has undergone great development. This trade has expanded thanks to the difference in duty between oil imported in barrels and that imported in small receptacles.

The trade figures published by Argentina confirm the regression of olive oil imports into that country; in fact, during the first nine months of 1934 there was purchased abroad 455,300 centals (5,982,000 gallons) of edible oil against 624,610 (8,207,000) in the first nine months of 1933.

From the information available concerning the quantity of olive oil destined for European consuming countries in 1934 it is apparent that the course of imports has been somewhat different according to country, in some cases it has differed only slightly from that in the preceding year, as for Switzerland; in others there has been a more or less severe contraction, as for Norway; France and the United Kingdom have shown greater capacity of absorption especially for Spanish oils.

Prices. — In 1934 prices of olive oil remained at a high level and at the end of December were generally above the average of the preceding year. A certain weakness was, however, experienced in Spain toward the end of the first semester: at that date the prices of almost all qualities reached minima for the year but in the following months the Spanish market made a good recovery and progress was fairly satisfactory. In Italy the average prices received by the growers rose steadily in 1934 with really appreciable increases each month, especially in March and in August. In other producing markets, too, the dominant feature of 1934 was the way in which prices were maintained, undoubtedly under the influence of the smallness of world stocks.

M. COSTA.

* * *

Turkey: The olive crop this year in the Mugla province was rather plentiful. Crushing has already begun in the factories.

Algeria: Thanks to the fine weather that prevailed until the end of December picking continued in good conditions; in some places it is reported, however, that the natives are gathering olives only for family consumption, owing to the very poor prices. It is generally confirmed that the quantity and quality of the crop are satisfactory and the official estimate has not been modified; yields of oil are average. In Oran pruning and cultivation were begun the end of December.

French Morocco: At the end of December harvesting was at an end in the South, in [Marrakesh, Safi and Mogador; it was approaching completion in the Centre, in Radla, in Meknès and Fez, and in Eastern Morocco.

Tunisia: The abundant rains of November and December slowed down, at times considerably, the ripening of the olives and hindered picking. Production appears accordingly to be smaller than was hoped for; the first yields of oil were poor.

COTTON

COUNTRIES	AREA					PRODUCTION OF GINNED COTTON									
	1934/35	1933/34	Average 1928/29 to 1932/33	% 1934/35		1934/ 1935	1933/ 1934	Average 1928/29 to 1932/33	1934/ 1935	1933/ 1934	Average 1928/29 to 1932/33	% 1934/35			
				1933/ 1934	Average 1934							1933/ 1934	Average 1934		
														1933/ 1934	Average 1934
1,000 acres			= 100	= 100	1,000 centals			1,000 bales of 478 lb.			= 100	= 100			
Bulgaria	51	51	15	100.0	343.1	112	53	20	23	11	4	212.6	551.4		
Greece	109	71	47	153.8	232.8	238	152	78	50	32	16	156.4	303.9		
Italy	7	4 1)	6	201.9	119.4	21	6 1)	12	4	1 1)	3	369.9	170.8		
*Romania	2	5	2)	29.3	671.9	...	8	1	...	2	3)	...	...
U. S. S. R.	4,764	5,070	3,914	94.0	121.7	9,259	9,021	7,275	1,937	1,887	1,522	102.6	127.3		
United States 4) . .	27,515	29,978	40,514	91.8	67.9	46,514	62,366	70,105	9,731	13,047	14,666	74.6	66.3		
Mexico	418	424	379	98.5	110.2	997	1,245	969	209	260	203	80.1	102.9		
China	6,803	6,142	5,225	110.8	130.2	14,890	13,027	10,593	3,115	2,725	2,216	114.3	140.6		
*Chosen	480	433	459	110.8	104.5	...	669	645	...	140	135	...	...
India 5)	22,600	22,953	22,934	98.5	98.5	18,220	18,632	19,304	3,812	3,898	4,038	97.8	94.4		
*Syria & Lebanon. .	31	19	48	160.9	64.8	...	20	51	...	4	11	...	...
Turkey	491	400	433	122.7	113.4	366	610	389	77	128	81	60.0	94.2		
Egypt	1,798	1,873	1,752	96.0	102.6	7,727	8,494	7,169	1,617	1,777	1,500	91.0	107.8		
Uganda	1,171	1,091	808	107.4	145.0	960	1,090	819	201	228	171	88.0	117.2		
*Anglo-Egypt. Sudan.	346	333	341	103.9	101.4	...	646	675	...	135	141	...	...
TOTALS	65,727	68,057	76,027	96.6	86.5	99, 04	114,696	116,733	20,776	23,994	24,420	86.6	85.1		

*) Countries not included in the totals.

1) Average 1929/30 to 1932/33. — 2) Area less than 500 acres. — 3) Production less than 500 bales. — 4) Not including linters. — 5) Third report.

Argentina: The cotton crop in the Chaco was backward in December owing to the drought and the absence of heat. In the zones of the Paraná and Paraguay rivers the situation was good, the plants reaching a height of 8 to 12 inches. In Santiago del Estero, and in the northern provinces of Santa Fé sowings were going forward well as a result of the generally favourable weather conditions.

Haiti: Production of cotton in the present year is estimated to be greater than both that of last year and the average.

French West Africa: Cotton cultivation has not shown any progress during the year 1934-35. The setting up of new weaving looms, however, may encourage this crop in the coming season. Cotton in Haut-Dahomey suffered owing to the delay in the rains.

Egypt: Cotton ginned up to the end of December in bales of 478 lb. net weight:

	1934	1933	1932	1931	1930	1929	1928
Sakellarisidis	117,930	142,480	158,830	170,700	223,990	310,690	367,470
Other varieties above:							
I $\frac{3}{8}$ "	148,260	140,090	75,880	719,600	739,620	764,700	824,520
I $\frac{1}{4}$ "	28,590	52,860	52,880				
I $\frac{1}{8}$ "	732,790	807,970	400,120				
Total . . .	1,027,570	1,433,400	687,710	890,300	963,610	1,075,390	1,191,990
Scarto (linters)	20,890	22,830	16,000	23,180	22,580	24,360	32,650
Total production (including Scarto)	*) 1,616,500	1,776,900	1,027,000	1,317,300	1,714,900	1,767,800	1,671,800

*) Second estimate.

Uganda: In the areas east of the Nile the abnormally low rainfall during the major part of the growing season has resulted in a poor development of the crop on the lighter soils in that area, and this position has been aggravated to some extent by the prevalence of sucking insects which these conditions favoured. On the heavier soils in this area such as Ausoga, the effect of these unfavourable weather conditions has not been so marked. In the areas west of the Nile, with the exception of a dry period during July and the first part of August, which delayed the main plantings, weather conditions have been, on the whole, favourable, and a continuance of the rains experienced in December should aid the production of a second crop and favour the later plantings.

French Togoland: Production in the year 1933-34 was greater than that of the preceding year and a further increase is anticipated in 1934-35.

FLAX

Argentina (Telegram of 28 January): The results of the linseed crop are not satisfactory either in quantity or quality.

India (Telegram of 3 January): The first forecast of area sown to linseed is 2,525,000 acres against 2,563,000 in 1933-34, a decrease of 1.5 %, and 2,373,000 on the average of the five years ending 1932-33, an increase of 6.4 %.

Flax.

COUNTRIES	†) AREA					†) PRODUCTION							
	1934	1933	Aver. 1928 to 1932	% 1934 — 1934/35		1934	1933	Aver. 1928 to 1932	1934	1933	Aver. 1928 to 1932	% 1934 — 1934/35	
	—	—	—	—		—	—	—	—	—	—	—	
	1934/35	1933/34	1928/29 to 1932/33	1933/ 1934 = 100	Aver. age = 100	1934/ 1935	1933/ 1934	1928/29 to 1932/33	1934/35	1933/34	1928/29 to 1932/33	1933/ 1934 = 100	Aver. = 100
	1,000 acres					1,000 centals			1,000 pounds				

Fibre.

*Germany ††)	22	12	25	180.0	88.3	592	—	59,210	34,336	—	172.4	—
Austria ††)	4	4	9	99.3	50.0	63	123	4,960	6,260	12,282	79.2	40.4
Belgium . . .	34	27	48	126.8	70.5	453	323	45,335	37,180	32,332	121.9	140.2
Bulgaria . . .	4	1	1	368.6	462.2	13	2	1,271	235	202	540.9	629.5
Estonia . . .	53	41	65	128.3	81.3	162	114	16,160	11,369	16,788	142.1	96.3
*Irish F. State .	2	1	4	237.2	57.3	...	4	15	...	405	1,463	...
*Finland †)	11	11	9	99.1	117.7	...	40	27	...	3,959	2,717	...
France . . .	58	37	63	157.0	91.8	295	203	461	29,495	20,287	46,056	145.4
*N. Ireland . . .	16	10	23	160.3	69.3	...	49	93	...	4,867	9,256	...
Hungary . . .	37	20	23	187.8	160.2	...	74	89	2,304	7,442	8,948	31.0
Italy . . .	9	8	13	106.6	69.0	46	40	55	4,559	3,979	5,454	114.6
Latvia . . .	114	103	123	111.6	92.8	363	273	345	36,310	27,337	34,498	132.8
Lithuania . . .	150	135	179	111.0	83.9	498	400	586	49,752	39,971	58,624	124.5
Netherlands . .	15	12	29	123.7	51.6	99	87	202	9,921	8,695	20,155	114.1
*Poland . . .	263	235	271	111.9	97.2	...	587	986	58,686	98,555	...	...
Czechoslovakia	23	18	34	130.7	70.0	112	79	141	11,178	7,931	14,097	140.9
Total Europe . .	501	406	587	124.4	86.1	2,114	1,707	2,495	211,245	170,686	249,436	123.9
*U. S. S. R. †)	5,313	5,928	4,767	—	—	...	12,346	9,585	...	1,234,593	958,494	...
Egypt . . .	5	3	3	148.6	176.6	32	25	19	3,192	2,494	1,892	128.0
TOTALS . §)	506	409	590	124.8	86.6	2,146	1,732	2,514	214,437	173,180	251,328	123.9

Linseed.

COUNTRIES	AREA					PRODUCTION							
	1934	1933	Aver. 1928 to 1932	% 1934 — 1934/35		1934	1933	Aver. 1928 to 1932	1934	1933	Aver. 1928 to 1932	% 1934 — 1934/35	
*Germany . . .	22	12	25	180.0	88.3	140	70	—	249	125	—	200.1	—
Austria . . .	3	3	5	99.4	51.4	10	10	19	19	17	34	107.5	54.0
Belgium . . .	34	27	48	126.8	70.5	151	134	240	270	239	429	112.7	62.9
Bulgaria . . .	4	1	1	368.6	462.2	19	4	4	34	8	7	420.0	452.0
France . . .	58	37	63	157.0	91.8	211	103	341	378	183	609	206.2	62.0
Hungary . . .	37	20	23	187.8	160.2	114	113	101	203	202	180	100.7	112.7
Italy . . .	10	10	32	99.2	30.3	46	49	124	82	87	222	93.3	36.7
Latvia . . .	114	103	123	111.6	92.8	334	272	325	596	485	580	122.9	102.8
Lithuania . . .	150	135	179	111.0	83.9	597	461	658	1,067	823	1,175	129.6	90.8
*Romania . . .	63	46	51	136.0	122.8	...	235	203	...	420	362	...	...
Czechoslovakia	23	18	34	130.7	70.0	89	59	111	160	105	199	151.4	80.2
Total Europe . .	453	354	508	123.9	85.9	1,571	1,205	1,923	2,809	2,149	3,435	131.0	81.8
*U. S. S. R. †)	5,624	6,757	6,094	83.2	92.3	...	17,196	16,202	...	30,707	28,932	...	...
Canada . . .	227	244	486	93.2	46.7	510	354	1,784	910	632	3,186	144.0	28.6
United States . .	974	1,328	2,757	73.3	35.3	2,942	3,890	8,958	5,253	6,947	15,961	75.6	32.9
India . . .	3,257	3,299	3,113	98.7	104.6	8,445	9,094	8,288	15,080	16,240	14,800	92.9	101.9
Turkey . . .	35	85	29	40.7	119.4	109	115	100	195	205	179	95.5	109.4
Egypt . . .	5	3	3	148.6	176.6	42	27	21	74	49	37	151.4	201.5
Eritrea . . .	5	4	3	133.3	200.0	26	20	24	47	35	43	133.3	110.2
*French Morocco	44	30	57	148.6	78.0	...	70	284	...	125	507	...	...
Argentina . . .	7,216 ¹⁰⁾	6,852 ¹⁰⁾	7,517 ¹⁰⁾	105.3	96.0	40,345	31,747	40,074	72,044	56,691	71,560	127.1	100.7
Uruguay . . .	453 ¹¹⁾	259 ¹¹⁾	356 ¹¹⁾	174.5	127.1	2,658	1,611	1,863	4,747	2,876	3,327	165.0	142.7
TOTALS . .	19,524	17,306	21,412	112.8	91.2	56,648	48,063	63,015	101,159	85,824	112,528	117.9	89.9

*) Countries not included in the totals. — †) The years indicated are those of the harvest, single years referring to the Northern hemisphere, double years to the Southern. — ††) Production expressed in terms of air-dried stalks. — §) In calculating the totals account has been taken of the probable area cultivated in some countries for which estimates of production are available but not those of area. — 1) Flax and hemp. — 2) Including 26,900 acres for seed. — 3) "Dolgunez" variety. — 4) Area established by the plan. — 5) Including 10,000 acres for fibre. — 6) Total area including that for fibre. — 7) Area sown up to 20 June. — 8) Years 1931 and 1932. — 9) Years 1928, 1929 and 1931, 1932. — 10) Area sown. — 11) Area harvested.

HEMP

COUNTRIES	AREA					PRODUCTION				
	1934	1933	Average 1928 to 1932	% 1934		1934	1933	Average 1928 to 1932	% 1934	
				1933 = 100	Average = 100				1933 = 100	Average = 100
1,000 acres					1,000 pounds					

Fibre.

Germany 1) . . .	1	1	1	180.5	81.0	—	—	—	—	—
Austria 2) . . .	1	1	1	93.5	77.7	1,080	1,320	1,716	81.8	62.9
Bulgaria	14	13	10	107.5	147.0	6,948	4,693	3,166	148.1	219.5
France	7	6	9	108.5	70.0	5,925	5,791	8,940	102.3	66.3
Hungary 3) . . .	27	21	19	127.5	145.5	—	14,836	12,235	—	—
Italy	148	141	184	105.2	80.6	133,325	129,720	165,657	102.8	80.5
Poland	81	79	78	102.0	103.8	—	22,993	38,793	—	—
Romania	113	118	101	95.4	112.1	—	57,397	46,604	—	—
Czechoslovakia .	18	19	21	95.3	84.3	10,797	11,768	12,106	91.8	89.2
U.S.S.R.	5) 1,448	1,866	2,174	77.6	66.6	—	339,733	587,887	—	—
Syria and Lebanon	3	2	6	114.6	42.1	—	1,720	3,745	—	—

Hempseed.

Bulgaria	14	13	10	107.6	147.0	5,116	3,756	2,396	136.2	213.5
France	7	6	9	108.5	70.0	694	1,381	2,935	50.3	23.6
Hungary 3) . . .	27	21	19	127.5	145.5	—	9,612	7,333	—	—
Italy	—	—	—	—	—	4,824	4,142	8,336	116.4	57.9
Czechoslovakia .	18	19	21	95.3	84.3	7,025	7,648	9,268	91.9	75.8
U.S.S.R.	5) 1,448	1,866	2,174	77.6	66.6	—	617,296	854,259	—	—

1) Hemp and other textile plants. — 2) Production expressed in terms of air-dried stalks. — 3) Unmixed crop. — 4) Including 3,158 acres for seed. — 5) Area sown up to 20 June. — 6) Area less than to 500 acres. — 7) Including 24,241 acres for fibre. — 8) Average 1929 to 1932.

TOBACCO

Argentina: As a result of the drought the tobacco crop in Chaco was backward. Transplanting was proceeding in good conditions in Tucuman, Salta and the National Territory of Misiones.

Brazil: According to leaf tobacco exporters in Bahia, one of the most important tobacco areas, the final estimate of leaf production in 1933-34 is 617,000 pounds. Quality is very satisfactory. As regards the 1934-35 crop local exporters are certain that it will be one of the best the State has ever produced, given the fine weather that has recently prevailed in the tobacco areas. Though some insect infestation is still reported it is thought that this will disappear if the fine weather continues. Production is expected to exceed that of 1933-34.

Tobacco.

COUNTRIES	AREA					PRODUCTION							
	1934	1933	Average 1928 to 1932	% 1934		1934	1933	Average 1928 to 1932	% 1934				
				1933	Aver- age				1933	Aver- age			
1,000 acres					= 100	= 100	1,000 pounds					= 100	= 100
*Germany 1).	30	30	26	102.4	115.8	...	64,890	2) 56,664	...	...	
Belgium	7	7	7	108.9	100.8	14,201	14,077	14,820	100.9	95.8			
Bulgaria	49	67	73	73.0	67.6	32,872	53,915	54,810	61.0	60.0			
Greece	185	192	217	96.7	85.5	92,594	120,987	117,205	76.5	79.0			
Hungary	40	45	58	89.4	69.4	46,155	52,583	73,327	87.8	62.9			
Italy	88	88	100	100.2	87.9	90,831	97,842	103,978	92.8	87.4			
*Romania	25	25	59	99.2	42.1	...	13,844	36,989	...	...	
*Switzerland	2	2	1	115.0	202.2	...	2,436	1,515	...	...	
Czechoslovakia	25	25	19	100.8	130.3	32,079	25,957	25,085	123.5	127.9			
Total Europe	394	424	474	93.6	83.3	308,732	365,361	389,225	84.4	79.2			
Canada . . . . .	...	46	46	...	...	38,120	44,873	42,795	85.0	89.1
United States	1,335	1,757	1,875	76.0	71.2	1,095,662	1,377,639	1,433,352	79.5	76.4			
Japan	85	84	89	101.1	95.7	148,989	146,696	142,612	101.6	104.5			
Syria and Lebanon . . .	10	17	11	63.3	94.3	7,216	6,712	6,828	107.5	105.7			
Turkey 3)	148	126	134	117.6	110.7	88,185	77,971	82,431	113.1	107.0			
Algeria	47	42	58	112.3	80.3	35,274	28,850	44,779	122.3	78.8			
GRAND TOTAL	§) 2,065	2,496	2,687	82.8	76.8	1,722,178	2,048,112	2,142,022	84.1	80.4			

*) Countries not included in the totals. — §) In calculating the total account has been taken of the probable area cultivated in Canada for which an estimate of production is available but not one of area.

1) Production for sale. — 2) Average 1931 and 1932. — 3) Unofficial data.

Canada: The following table shows the estimates of production in pounds of the various types of tobacco for 1934, together with the revised figures for 1933:

Type	1934	1933	% 1934 1933 = 100
Flue-cured	22,620,000	27,214,730	83.1
Burley	7,480,000	9,619,860	77.8
Dark	1,620,000	1,943,570	83.3
Cigar leaf	2,650,000	4,029,000	65.8
Large pipe	3,100,000	1,854,400	167.2
Small pipe	650,000	211,600	307.0
Total	38,120,000	44,873,160	85.0

Cuba: The figures for the production of tobacco in Cuba in 1934 compared with those of 1933 and 1932, according to the periodical reports of the *National Commission for the Propaganda and Defence of Havana Tobacco*, are as follows:

Zones	Area (acres)			Production (thousand lb.)			Yield (lb. per acre)		
	1934	1933	1932	1934	1933	1932	1934	1933	1932
Vuelta Abajo	31,427	31,165	20,334	15,314	13,064	10,504	487.3	419.2	516.3
Semi-Vuelta.	3,324	3,506	2,540	1,432	1,246	989	430.8	355.4	389.4
Partido. . . . .	...	2,281	1,693	...	1,376	1,004	...	603.2	593.0
Remidos	63,430	72,289	65,845	25,334	18,439	19,386	399.4	255.1	294.4
Oriente. . . . .	...	3,128	2,921	...	2,228	2,810	...	712.3	962.0
TOTAL . . . . .	...	112,369	93,343	...	36,353	34,693	...	323.5	371.7

The year 1932 shows the smallest tobacco production in the quinquennium 1930-1934 as the following table indicates:

Tobacco Production.

1930	lb.	82,118,000
1931	»	80,670,000
1932	»	34,692,957
1933	»	36,352,032
1934 (estimate)	»	46,300,000

Tobacco production in Cuba began to develop again in 1933. Although there are some data for the year 1934 which are not at present available but which may be placed at 4,000,000 to 4,400,000 lb., the total production of the country for this year will reach 46,300,000 lb., which will be 27.4 % greater than the 1933 production and 33.4 % greater than that of 1932.

The increase in the domestic consumption of tobacco manufactured during the first half of 1934 reflects the improvement which has been taking place in the economic conditions of the country. The sales during the first six months of that year reached a total of 5,967,500 lb. against 4,661,600 lb. during the corresponding period of 1933, an increase of 1,305,900 lb. or 28 %. The greatest part of this improvement occurred in cigarettes, sales of which in January to June inclusive, increased by 28.7 % over 1933. Consumption of pipe tobacco increased by 9.3 % and that of cigars by 0.3 %.

United States: The December estimates of area harvested and production of tobacco in 1934 compared with the final figures for the two preceding years are as follows:

Classification	Area thousand acres			% 1934 — 1933 = 100	Production thousand pounds			% 1934 — 1933 = 100
	1934	1933	1932		1934	1933	1932	
Flue-cured	710.8	935.0	618.1	76.9	564,520	738,583	376,819	76.4
Fire cured	151.2	168.1	159.2	89.9	128,894	128,043	125,472	99.9
Air-cured, light	380.4	542.7	454.4	70.1	306,417	403,742	337,525	75.9
Air-cured, dark	40.1	41.8	48.6	95.9	34,317	31,862	39,368	107.7
Cigar filler	28.9	35.1	71.7	82.3	30,190	31,247	67,789	96.6
Cigar binder	16.5	27.5	51.5	60.0	24,076	37,688	71,662	63.9
Cigar wrapper	6.9	5.9	6.9	116.9	7,048	6,156	6,934	114.5
Miscellaneous	0.4	0.5	0.8	80.0	200	318	522	62.9
TOTAL	1,335.2	1,756.6	1,411.2	76.0	1,095,662	1,377,639	1,026,091	79.5

Manchuria: Leaf tobacco, competing with American tobacco, is imported from China and Chosen. The possibility of increasing tobacco production in South Manchuria, where at present little is produced, is being studied.

The import duty on leaf tobacco has been increased by 100 % and manufacturers are consequently obliged to use cheaper tobacco leaf in their cigarettes.

Turkey: According to information from the Tobacco Monopoly Administration production in the Aegean area is 28,660,000 lb. while that of the Black Sea region is 24,250,000 lb. The crop in Marmara is estimated at 13,230,000 lb. The total production of the three most important areas is thus 66,140,000 lb.

Sales of tobacco are continuing actively. In several areas, particularly in the Aegean region, the crop has been sold completely.

Prices show an increase of about 80 % on those of 1933. The chief factors influencing the sales are the limitation in planting and the clearing arrangements.

The Protection Offices have requested the authorities to take steps to prevent a crisis which may emerge from the increase in sowings which will follow from the results of the present crop.

Algeria: Weather conditions in Constantine, which is the largest producer of tobacco of the three provinces of Algeria, were favourable up to the end of December to the nursery sowings. The number of these sowings indicates that the area this year may be increased.

HOPS

COUNTRIES	AREA						PRODUCTION					
	1934	1933	Average 1928 to 1932	% 1934		1934	1933	Average 1928 to 1932	% 1934			
				1933	Average				1933	Average		
											= 100	= 100
1,000 acres				1,000 pounds								
Germany	24	24	1)	29	100.9	82.9	14,427	14,977	1)	20,630	96.3	69.9
Belgium	2	1		3	147.1	84.6	3,871	1,580		2,977	245.0	130.0
France	5	4		8	118.6	62.9	6,026	3,178		6,370	189.6	94.6
Engl. and Wales	18	17		21	105.1	85.5	29,008	24,192		27,753	119.9	104.5
*Hungary	2)	2)		1	102.8	52.1	...	130		271	...	...
*Poland	7	5	3)	7	132.1	108.5	...	2,541	3)	3,694	...	...
Czechoslovakia	27	25		38	106.6	71.9	15,478	13,818		24,615	112.0	62.9
United States	36	30		23	118.2	157.7	40,345	39,965		28,011	101.0	144.0
TOTAL	112	101		122	107.1	93.7	109,155	97,710		110,356	111.7	98.6

*) Countries not included in the total. — 1) Average 1929 to 1932. — 2) Area less than 500 acres. — 3) Average 1928, 1929 and 1932.

OTHER PRODUCTS

Cacao.

Brazil: According to the Instituto de Cacau of Bahia, stocks of cacao at Bahia amounted on 17 December to 6 million pounds.

The following are the figures of crop movement for December:

Entries by rail (1000 lb):	December 1934	May-Dec. 1934	December 1933	May-Dec. 1933
Ilhéos zone	8,625	71,381	12,183	71,027
Rio de Contas zone	1,296	8,607	913	7,777

Gold Coast and British Togoland: Harvesting continued throughout November, aided by favourable weather in almost all districts. Only in the south of the Cape Coast district were unfavourable conditions reported. In Ashanti about 5 hours of sunshine a day were recorded and in other areas from 7 to 8 hours. At the end of November flowers and recently set pods were no longer to be seen on the trees and very few small pods remained. The bulk of the pods were mature and ripening off. Ripening had advanced rapidly and at the end of the month only about 10 % of the total crop was estimated to be still immature. On 15 December it was calculated that 72 % of the total crop, had been harvested, that is, 5 % more than at the same date last season. At this date the following were the cumulative percentages:

	Harvested	Marketed	In farmers' hands
Ashanti	72	37	35
Western Division	77	44	33
Central Division	78	50	28
Eastern Division	71	47	24
Trans-Volta Division	75	40	35
Weighted means	72	43	29

The weather was favourable for harvesting in the Western Province, in Ashanti and in some parts of the Eastern Province while in the Central Province it was moderate.

Poor drying weather was reported from the Krobo and Mpraeso districts of the Eastern Province. Conditions in Trans-Volta were favourable. Pod diseases and insect pests were reported from all districts but their incidence was normal and the loss of crop from these causes was not expected to be larger than usual. The pods remaining on the trees were nearly all mature and were expected to ripen within a short time. On many farms the main pickings had been completed. A few flowers, early indications of the minor crop, were appearing.

During the first half of December under 45 million pounds were marketed. This shows a slackening of the rate of marketing from 31 million pounds a week in November to less than 22 million. The slowing down was most noticeable in Ashanti. The latest reports suggested that the anticipation of a further rise in value after Christmas was mostly responsible and evidence of an organized hold-up was not apparent. After the first main pickings have been marketed farmers are able to wait and see if the customary rise in price after Christmas takes place. Total cacao passing the gate checks at SENCHI, KOFORIDUA, NSAWAM and ACCRA during December was 76 million pounds against 74 million in November.

Crop movement in November was as follows in millions of pounds:

	November 1934	Oct.-Nov. 1934	November 1933	Oct.-Nov. 1933
Railway offloadings, Takoradi	29	41	39	47
Exports:				
Takoradi	20	24	19	27
Accra	23	34	19	27
All ports	57	76	41	60

Exports during December were 73 million pounds, bringing the total shipment for the three months to 149 million pounds.

From the total of about 149 million pounds exported up to the end of December, about 4 million carried over from the mid-crop should be deducted, leaving an export of 145 million from the current crop. At the thirteen centres at which either inspection is carried out under Ordinance XIV of 1934 or the district agricultural officer has obtained an estimate of stocks from local firms about 112 million pounds were in store on 15 December. The difference between this figure and the total estimate of stocks represents the stocks held in other towns.

The results of inspection under Ordinance XIV, on a total of 97 million pounds examined in November, gave a purity of 91.3 % and the size of beans as 121.6 per 14 cubic inches or 99.1 per 4 ounces.

Tea.

India: In North India November was cold and picking was practically at an end. To the end of November production was nearly 7 ½ million pounds above the corresponding figure for 1933.

In South India, though unsettled conditions prevailed in November they were on the whole favourable and crop prospects were fairly good. Outturn was 0.04 % ahead of that to the end of November in 1933.

Indo-China: Pickings in November in Tonkin were small; quality was good.

Nyasaland: Weather conditions in December were favourable for plucking of tea, which progressed more quickly than last year.

Coffee.

Brazil: According to the figures of the National Coffee Department, the quantity of coffee destroyed up to the end of November was 44,392,000 centals, of which 1,032,000 centals were destroyed during November.

Haiti: Coffee production in the year 1934-35 will be appreciably smaller than that of last year and below the average.

Mexico: According to the first estimate, production of coffee this year is about 856,000 centals against 779,000 in 1933-34 and 863,000 on the average of the five years ending 1932-33; percentages 109.9 and 99.3.

Dominican Republic: Production in 1934-35 was smaller than in the previous year owing to drought damage.

Belgian Congo and Ruanda Urundi: The Belgian Minister for the Colonies communicates the following details on the coffee crop. The area planted by Europeans was on 31 December 104,470 acres, of which 101,465 were in the Belgian Congo and 3,005 in Ruanda Urundi. In all 44,917,670 bushes were planted including 27,870,631 *robusta*, 17,706,890 *arabica* and 722,660 of other species. The total production of green coffee

by Europeans in 1933-34 was 21,483,000 pounds. To this must be added the native production in the same period, namely, 515,400 pounds, making a total of 21,998,400 pounds:

According to the same authority expectations for 1934-35 are as follows. The probable output of Europeans is 29,164,000 pounds and that of natives 686,000, a total of 29,850,000 pounds, or 135.7 % of the total for 1933-34. The increase of production by Europeans foreseen for 1934-35 is 35.8 % with respect to that of the preceding year, while native production will be 33.1 % greater than that obtained in 1933-34.

Uganda: During December coffee was coming in freely: the quality was reported to be average.

Groundnuts.

Argentina: Sowings of groundnuts were proceeding actively during December in Tucuman and Santiago del Estero where an area exceeding that of last year will be cultivated. The condition of the crop in Corrientes was excellent though there were complaints of weeds. Germination in Cordoba was irregular owing to the rather unfavourable weather.

Mexico: The excessive rains of November caused damage to the groundnut crop in some areas, while in the States of Guerrero and Michoacán the crop was delayed by drought.

French West Africa: Despite the large quantity of seed distributed, exceeding by nearly 9 % that in 1933, the area cultivated in Senegal in 1934 did not, owing to the lateness of the rains, show any increase on that of last year; it remains, however, large, since the area cultivated in 1933 was a maximum. It was also expected that, for the same reasons, the crop would not be as good as in 1933, when it attained the maximum of 12,600,000 centals; it appeared likely, however, to exceed the five year average, which was a little less than 9,900,000 centals.

On the other hand the crop was extended to Dahomey and, in consequence of favourable conditions, it was expected that production would be good and certainly larger than that of last year and probably than the average.

The same applies to the Niger, where the area has grown and the quantity available for export was estimated at about 660,000 centals, a relatively high figure for the colony.

On the whole, the total production of groundnuts in French West Africa in 1934 appeared to be somewhat smaller than that of last year, which was nearly 18,500,000 centals, but distinctly above the five-year average, which was about 15,000,000 centals.

Egypt: Harvesting is over. The yield is about 10 % below the average owing to the attacks of cotton-worm during August and September. Crop condition on 1 January 1935 was 91 according to the system of the Institute.

Colza and sesame.

Austria: Crop condition of winter colza on 1 January was 1.8, as at 1 December, against 2.3 on 1 January 1934.

Poland: Condition of winter colza on 15 December was 3.8 according to the system of the country, as on 15 November 1934.

Romania: The frosts in the first decade of January caused serious damage to winter colza.

India (Telegram of 3 January): The first forecast of area sown to colza and mustard is 2,763,000 acres against 3,282,000 in 1933-34, a decrease of 15.8 % and 3,189,000 on the average of the five years ending 1932-33, a decrease of 13.4 %.

(Telegram of 17 January): The final forecast of the sesame crop is as follows:

		1934-35	1933-34	Average 1928-29/1932-33	% 1934-35 1933-34 = 100	Average = 100
Area	(000 acres)	5,041	6,057	5,659	83.2	89.1
Production	(000 centals)	8,602	11,558	11,222		
	(000 sh. tons)	430	578	561	74.4	76.6

Sericulture.

Indo-China: Pruning was proceeding at the end of November in Annam and Cambodia. There was little rearing. It is reported that in one province of Annam many cultivators have pulled up their mulberry trees and turned their attention to maize growing.

Sericulture.

COUNTRIES	QUANTITIES OF EGGS PREPARED FOR INCUBATION					PRODUCTION OF COCOONS				
	1934	1933	Average 1928 to 1932	% 1934		1934	1933	Average 1928 to 1932	% 1934	
				1933	Aver- age				1933	Aver- age
1,000 ounces			= 100	= 100	1,000 pounds			= 100	= 100	
Bulgaria	27	27	36	100.6	76.3	2,956	3,006	3,978	98.3	74.3
France	18	16	35	106.4	49.8	2,150	2,079	3,984	103.4	54.0
Italy	444	519	841	85.6	52.8	63,579	75,431	101,975	84.3	62.3
Totals for Europe .	489	562	912	86.9	53.7	68,685	80,516	109,937	85.3	62.5
Chosen s).	227	220	211	103.2	107.2	33,566	30,016	26,161	111.8	128.3
Japan { s)	2,732	2,864	2,735	95.4	99.9	399,970	413,525	422,161	96.7	94.7
Japan { f)	2,902	3,527	3,383	82.3	85.8	302,952	422,830	386,434	71.6	78.4
Syria and Lebanon	48	52	87	92.1	55.2	2,866	4,068	6,623	70.5	43.3
Turkey	53	46	54	115.3	98.2	6,614	4,171	2,812	158.6	235.2
GENERAL TOTALS .	6,451	7,271	7,382	88.7	87.4	814,653	955,126	954,128	85.3	85.4

s) Spring cocoons. — f) Summer-autumn cocoons.

Italy: Crop condition of fodder at the end of December was generally satisfactory. Weather during the month was rather wet.

Poland: Condition of clover, in the system of the country, was 3,2 on 15 December as on 15 November 1934.

Portugal: The prolonged drought of autumn greatly injured pastures but, following on the rains of December, their condition was appreciably improved. Supplies of green fodder are sufficient.

Switzerland: The situation of the dry fodder market has not undergone appreciable change since last December. With the mild weather which predominated up to the middle of January it has been possible to economise stocks of hay and to abstain from using substantial amounts of concentrated foods. Some areas which normally have a surplus are experiencing a shortage of fodder and will be unable to make deliveries this year. There is, however, no ground for anxiety in the matter of supplies as many other regions which usually have to buy hay, received a good crop last year and are in a position to put some on the market. Supplies from abroad are coming chiefly from Italy, other countries making limited contributions.

Argentina (Telegram of 28 January): Meadows and pastures are in good condition.

Algeria: Weather up to the end of December was generally favourable to all fodder crops, to meadows and to pastures. Toward the end of the month a fall in temperature slowed down growth.

Egypt: Weather conditions in December were generally favourable to the growth of bersim. Cotton worm attacks subsided at the beginning of the month. Growth improved during the month. The first cutting is being taken from the early as well as the general crops. The second cutting has been started in some fields. Watering is general but manuring is confined to the areas which need it.

Crop condition on 1 January was 100 as at the same date last year.

French Morocco: Mild temperature permitted growth of grass on the coastal pasture tracks but in the interior natural vegetation was at the end of December still very small.

Tunisia: Thanks to the abundant rains of November and December vegetation of fodder crops and pastures was well developed; it was very good at the beginning of January.

LIVESTOCK AND DERIVATIVES

The pig crop in Germany.

According to the latest estimate in December the total number of pigs has decreased with respect not only to that in September 1934 but also to that of December 1933. The number of pigs under 6 months and that of pigs over one year was lower at the beginning of December 1934 than at the same date in

1933. On the other hand the number of pigs from 6 months to one year is relatively high, according to the latest estimate, while the number of younger and older sows for breeding is relatively low.

Numbers of pigs in Germany (1).

(thousands).

CLASSIFICATION BY SEX AND AGE	5 Dec. 1934	4 Sept. 1934	4 June 1934	5 March 1934	5 Dec. 1933	7 June 1933	3 March 1933	1 Dec. 1932	1 Sept. 1932	1 June 1932	1 March 1932	1 Dec. 1931	1 Sept. 1931	1 June 1931
<i>Totals</i>	23,143	25,047	22,368	22,010	23,890	21,174	20,238	22,859	24,176	21,289	20,633	23,808	25,348	22,529
<i>Sucking pigs under 8 weeks of age</i>	4,512	6,348	5,283	5,715	5,126	5,139	5,152	4,834	6,326	5,501	5,013	5,128	6,804	6,027
<i>Young pigs from 8 weeks to 6 months of age</i>	10,040	10,594	10,436	10,022	10,353	9,752	9,379	9,884	10,341	9,832	9,976	10,484	10,980	10,351
<i>Pigs from 6 months to 1 year of age</i>	6,320	6,072	4,787	4,440	5,984	4,450	3,966	5,812	5,435	4,109	3,853	5,782	5,391	4,172
<i>Of which:</i>														
Boars for service	46	42	44	48	49	46	46	49	46	46	47	50	51	54
Sows for breed- ing (total)	453	471	547	561	549	653	528	485	517	607	549	494	569	693
Sows covered	(244)	(229)	(338)	(327)	(306)	(422)	(316)	(259)	(255)	(374)	(323)	(251)	(276)	(409)
Other swine	5,821	5,559	4,196	3,831	5,386	3,751	3,392	5,278	4,872	3,456	3,257	5,238	4,771	3,425
<i>Pigs 1 year old and over</i>	2,271	2,033	1,862	1,833	2,427	1,833	1,741	2,329	2,074	1,847	1,791	2,414	2,173	1,979
<i>Of which:</i>														
Boars for service	61	72	71	66	62	73	66	61	75	73	67	63	73	71
Sows for breed- ing (total)	1,329	1,483	1,519	1,433	1,466	1,511	1,381	1,384	1,559	1,534	1,425	1,458	1,661	1,663
Sows covered	(822)	(768)	(949)	(841)	(973)	(972)	(817)	(851)	(877)	(938)	(875)	(870)	(907)	(1,071)
Other swine	881	478	272	334	899	249	294	884	440	240	299	893	439	245

1) Present territory, excluding the Saar.

The pig crop in the United States.

The pig crop report of 1 December issued by the United States Department of Agriculture, from which the following figures are taken, shows a decrease of about 48 % in the fall pig crop of 1934 from that of 1933, a decrease of about 35 % in the combined fall and spring pig crop of 1934 from that of 1933, and a prospective decrease of 17 % in the number of sows to farrow in the spring season of 1935 from the relatively small number farrowed in the spring of 1934.

Pigs saved.

Year	Fall (1 June- 1 Dec.) Thousand head	% 1934 1933	Number per litter	Spring (1 Dec.- 1 June) Thousand head
1934	1) 15,432	52.0	5.84	37,491
1933	29,668	—	5.91	52,089

1) Preliminary.

Sows farrowed.

Year	Fall (1 June- 1 Dec.)	Year	Spring (1 Dec. 1 June)	% 1935 1934
1934	2,643	1935	1) 5,356	83.4
1933	5,020	1934	6,425	—

1) Number indicated to farrow from breeding intentions reports.

The 1934 fall pig crop is much the smallest shown in the 11 years for which estimates are available and is probably the smallest for 35 years. In the North Central States (Corn Belt) the decrease in sows farrowed and in pigs saved was considerably larger than in other areas. The combined spring and fall crop of 1934 is similarly the smallest for many years. There is considerable variation in the decreases in the estimates of the number of sows to farrow in the spring of 1935, the States most seriously affected by the drought of last year showing the largest decreases.

Current information on livestock and derivatives.

Belgium: Health of stock is excellent. The animals were still on pasture during the greater part of December, this allowing the breeders to feed them economically.

Irish Free State: Supplies of fodder and concentrated foods for feeding to milch cows were adequate for all normal requirements. Yields of milk were satisfactory for the season of the year.

Great Britain and Northern Ireland: Animals generally are in a satisfactory condition.

Milk yields are being well maintained.

Hungary: The condition of animals at the end of December was generally satisfactory.

Netherlands: Feeding condition for dairy cows in December were generally good owing to the mild weather, to the excellent quality of hay and to the abundance of cabbage, mangels, etc., which took the place of concentrated foods.

Milk production increased in Guelder, Limburg, Groningen and Friesland by 10 %, 6 %, 5 % and 3 % respectively. Production in other provinces varied only slightly from the normal.

Argentina (Telegram of 28 January): Health of livestock is good.

Algeria: At the end of December livestock was generally in good condition despite sharp variations in temperature during the first half of the month.

Precipitation was satisfactory though rather irregular and the winter was fairly mild up to the end of December, when a rather marked fall in temperature took place. Feed was abundant and of good quality and seemed assured for the winter. Conditions for lambing were reported as very satisfactory. The year 1934 is considered to have been a good one for Algerian stockrearing.

French Morocco: The scarcity of grass in the interior led to a decline in condition of stock though the latter remained very satisfactory as the animals had so far suffered little from storms. Water-courses were well filled and the water table rose appreciably save in the south at Marrakesh.

Tunisia: At the end of December the position was good. Feed was abundant and of good quality.

Union of South Africa: For many years conditions have not been so favourable throughout the Union. Veld and stock were in excellent condition in November and prospects were promising. It was however, feared that the veld would soon become too rank for sheep. Locusts were reported over vast areas of the Union, and much damage had already been done at various places.

Many farmers are still busy shearing and the wool clips were relatively clean and of good quality.

LATEST NEWS

Japan (telegram of 30 January). — Outturn of summer-autumn cocoons is finally estimated at 321 million pounds against 423 million in 1933 and 386 million on the average. Total cocoon production in Japan (including also spring cocoons) is only 721 million pounds, a decrease of about 115 million (14 %) on that of 1933 and of about 88 million (11%) on the five-year average.

Stocks in farmers' hands in England and Wales.

PRODUCTS	% Stocks: total production				Stocks in 1,000 centals			
	1 Jan. 1935	1 Jan. 1934	1 Jan. 1933	1 Jan. 1932	1 Jan. 1935	1 Jan. 1934	1 Jan. 1933	1 Jan. 1932
Wheat	40	38	41	56	15,568	13,328	10,058	11,984
Barley	35	29	41	38	5,712	4,166	7,078	6,518
Oats	52	53	55	55	13,238	14,650	15,389	15,322
Potatoes	52	51	49	42	39,850	40,074	36,490	22,557
Hay	66	64	70	71	84,202	81,334	107,162	125,440
Straw	64	63	65	63	56,851	54,253	54,410	52,662

TRADE

COUNTRIES	NOVEMBER				FOUR MONTHS (August 1-Nov. 30)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1934	1933	1934	1933	1934	1933	1934	1933	1933-34	1933-34
Wheat. — Thousand centais (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Bulgaria	0	298	0	0	0	1,109	0	0	2,562	0
Hungary	688	2,055	0	0	2,097	7,313	0	0	15,496	0
Lithuania	11	0	0	0	33	0	0	0	0	0
Poland	0	31	0	159	291	130	4	353	1,596	501
Rumania	0	31	0	2	0	73	0	4	141	17
Yugoslavia	406	0	0	0	1,512	209	2	0	553	0
U. S. S. R.									18,975	—
Canada	11,261	13,887	0	0	43,727	44,862	0	4	101,960	7
United States	97	306	1,356	575	1,279	359	5,886	2,449	12,315	6,404
Argentina	8,435	2,044	—	—	36,454	18,852	—	—	84,074	—
Chile	—	—	—	—	465	1	0	582	582	765
Syria and Lebanon	55	46	0	11	161	309	9	73	423	198
Turkey	—	—	—	—	—	—	—	—	260	0
Algeria	624	562	26	42	3,159	2,555	115	154	6,493	340
French Morocco	276	628	0	0	1,583	2,147	0	0	5,082	0
Tunis	—	—	—	—	496	408	126	282	1,124	1,122
Australia	2,661	2,273	0	0	13,040	10,662	0	0	36,090	0
New Zealand	—	—	—	—	0	181	4	49	181	119
<i>Importing Countries:</i>										
Germany	4	2 189	690	1,592	115	6,704	3,840	5,882	12,516	17,163
Austria	0	0	370	282	0	0	1,451	1,248	0	4,866
Belgium	196	134	1,792	2,679	542	377	10,534	8,726	1,459	26,226
Denmark	0	0	1,122	814	26	9	3,245	2,998	9	6,764
Spain	0	0	0	0	0	0	0	0	0	0
Estonia	0	0	0	0	0	0	0	0	0	0
Irish Free State	0	0	562	604	0	0	3,296	3,457	0	10,280
Finland	0	0	178	68	0	0	437	379	0	1,098
France	1,739	24	1,270	1,625	4,683	1,327	6,151	6,722	1,905	16,493
Gr. Brit. and N. Irel.	26	62	9,094	11,299	384	185	38,076	43,775	754	120,064
Greece	0	0	406	549	0	0	2,048	2,833	0	6,285
Latvia	2	2	844	747	7	7	2,665	2,463	7	9,908
Norway	—	—	315	417	0	0	1,146	1,409	0	3,761
Netherlands	0	0	1,122	1,230	4	7	3,785	7,083	1,303	13,649
Portugal	—	—	11	33	—	—	71	77	—	384
Sweden	0	0	95	117	157	0	357	448	375	1,089
Switzerland	0	0	864	899	2	4	3,341	4,275	7	10,558
Czechoslovakia	0	0	0	2	2	2	4	82	4	88
China	—	—	—	—	101	1	485	1,257	185	11,200
India	11	7	0	99	214	15	0	99	44	165
Japan	—	—	855	500	—	—	3,128	2,851	—	9,811
Egypt	—	—	—	—	2	2	110	2	9	7
Union of South Afr.	—	—	—	—	2	2	146	4	0	33
Totals	26,492	24,579	20,922	24,345	110,536	97,808	90,662	100,020	306,484	279,365
Rye. — Thousand centais (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Germany	0	952	77	104	44	3,812	463	1,757	6,945	2,196
Bulgaria	0	0	0	0	0	13	0	0	18	0
Estonia	0	0	0	0	494	0	22	0	0	0
Hungary	51	260	0	0	362	1,698	0	0	3,455	0
Latvia	—	—	—	—	348	1	0	0	0	0
Lithuania	86	0	0	0	150	11	0	0	49	0
Poland	571	1,532	0	73	3,527	4,096	0	159	10,479	229
Rumania	0	0	0	0	0	0	0	0	0	0
Sweden	214	0	2	2	1,093	0	7	15	42	31
U. S. S. R.	—	—	—	—	—	—	—	—	3,316	—
Canada	22	196	0	0	348	1,424	4	0	1,444	0
Argentina	170	60	—	—	1,168	1,124	—	—	2,178	—
Turkey	—	—	—	—	—	—	—	—	267	0
Algeria	—	—	—	—	15	4	0	0	22	0
<i>Importing Countries:</i>										
Austria	0	0	192	0	0	0	467	2	0	172
Belgium	0	0	256	365	0	11	820	2,363	11	4,804
Denmark	0	0	355	961	2	0	1,631	3,261	0	5,895
Finland	0	0	7	31	0	0	73	353	0	1,773
France	0	0	4	7	0	0	24	46	0	71
Italy	0	0	4	9	0	0	20	24	0	126
Norway	0	0	306	337	0	0	935	1,168	0	3,201
Netherlands	33	0	192	112	225	7	454	1,279	7	5,110
Switzerland	0	0	13	7	0	0	40	13	0	137
Czechoslovakia	0	0	2	2	2	13	9	7	18	20
United States	0	0	732	1,347	0	4	1,415	3,627	9	5,060
Total	1,147	3,000	2,142	3,387	7,778	12,217	6,384	14,074	28,260	28,225

(1) (2) (3) (4) See notes page 67.

COUNTRIES	NOVEMBER				FOUR MONTHS (August 1-Nov. 30)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1934	1933	1934	1933	1934	1933	1934	1933	1933-34	1933-34
Wheat flour. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Germany	33	518	7	9	547	1,543	20	29	5,578	55
Bulgaria	0	7	0	0	0	42	0	0	93	0
Spain	0	4	0	0	0	13	0	0	31	0
France	434	357	176	97	1,576	1,477	664	289	4,149	937
Hungary	128	198	0	0	284	661	0	0	1,466	0
Italy	309	293	7	46	1,387	1,292	35	148	3,849	320
Lithuania	0	2	0	0	0	13	0	0	22	0
Poland	29	20	0	0	95	51	0	0	282	0
Rumania	0	0	0	0	0	7	0	0	7	0
Yugoslavia	7	9	0	0	18	20	0	0	55	0
Canada	988	1,074	82	2	3,472	4,105	198	35	10,690	176
United States	745	591	0	0	3,243	2,531	0	0	7,584	2
Argentina	157	190	—	—	789	717	—	—	2,425	—
Chile	...	...	...	...	35	...	24	4	22	55
India	31	26	0	0	101	93	0	0	260	2
Japan	608	357	2	2	2,288	2,154	4	9	5,569	22
Turkey	...	...	...	...	...	...	...	...	2	0
Algeria	75	62	7	4	346	251	24	26	897	101
French Morocco	4	9	0	0	9	40	0	1	49	9
Tunis	...	...	...	...	289	35	7	11	223	249
Australia	1,435	814	0	0	5,176	3,408	0	0	10,922	0
<i>Importing Countries:</i>										
Austria	0	0	53	93	0	0	150	278	0	992
Belgium	4	4	7	9	15	18	51	99	42	287
Denmark	0	0	31	71	9	7	198	298	13	584
Estonia	0	0	0	0	0	0	0	0	0	0
Irish Free State	0	0	73	97	0	0	236	659	0	1,091
Finland	0	0	71	86	0	0	293	381	0	1,146
Gr. Brit. and N. Irel.	403	295	780	1,087	1,232	1,248	3,241	4,222	3,245	11,674
Greece	0	2	2	2	0	2	7	7	0	13
Norway	0	2	66	146	2	2	386	421	4	930
Netherlands	0	2	93	77	2	2	309	364	7	880
Portugal	—	—	4	9	—	—	42	60	—	143
Sweden	0	0	0	0	0	0	0	2	0	4
Czechoslovakia	0	0	0	2	2	4	7	11	7	22
Ceylon	—	—	31	42	—	—	130	132	—	386
China	...	...	...	...	53	26	324	364	165	1,314
Java and Madura	—	—	...	...	—	—	280	313	—	1,087
Indo-China	—	—	...	...	—	—	227	84	—	337
Syria and Lebanon	4	11	2	51	15	49	26	271	77	888
Egypt	...	...	...	...	0	0	18	24	0	99
Union of South Afr.	...	...	...	...	0	0	2	2	0	9
New Zealand	...	...	...	...	0	0	51	46	2	209
Totals	5,394	4,847	1,494	1,932	20,985	19,811	6,954	8,591	57,739	24,023
Barley. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Bulgaria	0	11	0	0	0	216	0	0	522	0
Spain	0	2	0	0	0	37	0	0	44	0
Hungary	4	205	11	0	71	717	11	0	1,093	0
Poland	772	470	0	0	3,340	1,382	0	0	3,538	0
Rumania	628	2,432	0	2	2,965	9,332	0	2	14,654	4
Czechoslovakia	249	300	0	0	659	675	0	0	1,116	2
Yugoslavia	60	7	0	0	368	108	0	0	176	0
U. S. S. R.	...	...	—	—	...	...	—	—	12,500	—
Canada	1,402	82	0	0	3,794	205	0	0	820	0
United States	251	624	780	11	1,250	1,155	2,103	11	2,531	152
Argentina	90	57	—	—	1,202	871	—	—	11,605	—
Chile	...	...	...	...	650	229	0	0	2,006	0
India	24	0	0	7	231	0	0	33	2	95
Turkey	...	...	...	...	...	...	...	...	505	0
Algeria	223	73	84	57	351	386	421	355	1,144	496
Egypt	...	...	...	...	0	115	2	0	139	0
French Morocco	562	282	0	0	3,347	1,479	0	0	2,628	0
Australia	4	2	0	0	322	322	0	0	1,407	0
<i>Importing Countries:</i>										
Germany	0	0	1,814	833	0	0	5,516	1,799	2	7,648
Austria	0	0	154	280	0	0	679	675	0	2,588
Belgium	49	11	620	1,241	212	344	3,481	4,165	655	8,962
Denmark	146	185	66	112	1,047	351	470	560	977	1,314
Irish Free State	0	0	2	0	4	9	2	68	11	212
France	0	0	395	342	0	0	1,528	2,050	0	3,915
Gr. Brit. and N. Irel.	0	0	1,539	2,754	4	7	7,059	9,114	26	20,322
Greece	0	0	2	0	0	0	2	2	0	4
Italy	0	0	117	115	0	0	529	293	0	1,124
Norway	0	0	37	22	0	0	86	183	0	293
Netherlands	15	0	608	1,532	130	0	2,180	5,900	26	11,543
Switzerland	0	0	287	295	0	0	1,091	639	0	2,412
Syria and Lebanon	33	4	7	22	60	49	13	71	79	216
Tunis	...	...	...	...	15	44	487	57	84	602
Totals	4,312	4,747	6,523	7,625	20,022	18,033	25,660	25,977	58,290	61,994

COUNTRIES	NOVEMBER				FOUR MONTHS (August 1-Nov. 30)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1934	1933	1934	1933	1934	1933	1934	1933	1933-34	1933-34

Oats. — Thousand centals (1 cental = 100 lb.).

<i>Exporting Countries:</i>										
Irish Free State . . .	0	7	0	0	0	11	0	0	20	0
Hungary	0	121	0	0	0	478	0	0	761	0
Lithuania	0	0	0	0	0	0	0	0	2	0
Poland	66	9	0	0	24	44	0	0	304	0
Rumania	0	126	0	0	0	434	0	0	505	0
Czechoslovakia . . .	0	77	0	0	0	412	0	0	741	0
Yugoslavia	40	0	0	0	205	33	0	0	112	0
Canada	569	203	0	0	1,859	450	0	0	2,070	2
United States	2	4	405	4	11	86	825	13	123	71
Argentina	1,466	218	—	—	5,520	1,942	—	—	7,053	—
Chile . . . . .	...	...	...	...	425	108	...	...	1,530	0
Tunis . . . . .	...	...	...	...	198	13	...	...	86	22
Australia	4	2	0	0	51	9	0	0	33	2
<i>Importing Countries:</i>										
Germany	0	412	289	9	9	1,102	578	53	1,931	97
Austria	0	0	4	9	0	0	62	95	0	450
Belgium	0	0	4	7	0	0	35	29	0	390
Denmark	57	0	42	24	439	9	293	185	26	373
Estonia	0	0	0	0	0	0	0	0	0	0
Finland	0	0	0	77	0	0	11	212	9	549
France	2	0	51	35	4	2	185	132	179	238
Gr. Brit. and N. Irel.	2	2	220	683	4	7	935	1,766	20	4,894
Italy	0	0	505	165	0	0	1,541	683	0	2,811
Latvia . . . . .	...	...	...	...	0	0	...	...	0	2
Norway	0	0	0	0	0	0	0	0	4	2
Netherlands	0	0	29	77	0	2	240	461	20	1,142
Sweden	2	0	0	97	18	0	9	467	9	915
Switzerland	0	0	328	359	0	0	1,567	1,219	0	4,780
Algeria	29	18	9	29	68	37	33	64	64	282
Totals	2,239	1,199	1,887	1,575	9,058	5,179	6,314	5,383	15,602	17,022

Maize. — Thousand centals (1 cental = 100 lb.).

COUNTRIES	NOVEMBER				FOUR MONTHS (August 1-Nov. 30)				TWELVE MONTHS (August 1-July 31)	
	1934	1933	1934	1933	1934	1933	1934	1933	1933-34	1933-34

Maize. — Thousand centals (1 cental = 100 lb.).

<i>Exporting Countries:</i>										
Bulgaria	77	20	0	0	2,564	3,208	0	0	—	—
Hungary	22	295	0	0	1,056	4,405	0	0	—	—
Rumania	1,792	432	0	0	10,115	34,262	0	2	—	—
Yugoslavia	2,156	774	0	0	11,810	14,242	2	0	—	—
United States	99	683	265	15	2,401	3,732	763	95	—	—
Argentina	8,871	10,346	—	—	127,357	104,158	—	—	—	—
Java and Madura . . .	13	95	—	—	924	1,556	—	—	—	—
Indo-China . . . . .	...	...	—	—	8,439	6,303	—	—	—	—
Syria and Lebanon . . .	0	0	0	2	0	22	66	324	—	—
Turkey . . . . .	...	...	...	...	26	7	0	0	—	—
Egypt . . . . .	...	...	...	...	2	216	20	4	—	—
Union of South Afr. . .	525	0	...	...	3,693	3,510	432	0	—	—
<i>Importing Countries:</i>										
Germany	0	0	875	538	0	0	7,452	6,515	—	—
Austria	0	2	1,021	919	2	0	10,448	11,413	—	—
Belgium	198	49	1,054	983	822	1,396	16,824	17,800	—	—
Denmark	0	0	439	445	0	0	4,586	13,592	—	—
Spain	0	0	99	22	0	0	1,307	2,068	—	—
Irish Free State	0	0	622	209	0	0	6,543	7,000	—	—
Finland	0	0	22	137	0	0	1,312	1,257	—	—
France	0	2	1,768	1,554	22	2	13,607	17,209	—	—
Gr. Brit. and N. Irel. .	196	73	6,934	4,217	2,116	1,944	66,597	58,531	—	—
Greece	0	0	20	4	0	0	37	611	—	—
Italy	0	0	88	306	2	2,105	3,874	2,842	—	—
Norway	0	0	256	300	0	0	3,084	3,501	—	—
Netherlands	0	0	1,929	1,537	13	73	22,011	31,524	—	—
Poland	0	0	0	4	0	0	60	88	—	—
Portugal	—	—	110	126	—	—	1,669	1,437	—	—
Sweden	0	0	86	500	0	0	3,106	5,562	—	—
Switzerland	0	0	192	128	0	0	1,792	1,894	—	—
Czechoslovakia	0	0	132	516	0	0	5,150	3,360	—	—
Canada	0	0	783	388	2	20	4,090	4,337	—	—
Japan	—	—	0	0	—	—	2	44	—	—
Tunis . . . . .	...	...	...	...	4	20	101	0	—	—
Totals	13,949	12,771	16,695	12,850	171,370	181,181	174,935	191,010	—	—

COUNTRIES	NOVEMBER				ELEVEN MONTHS (January 1-Nov. 30)				TWELVE MONTHS (January 1-Dec. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1934	1933	1934	1933	1934	1933	1934	1933	1933	1933
Rice. — Thousand cents (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Spain	2	7	0	0	944	185	0	0	190	0
Italy	304	617	7	2	3,075	3,909	35	108	4,295	117
United States	64	79	57	33	860	1,265	507	276	1,365	302
Brazil . . . . .	...	...	...	...	518	401	...	...	494	...
India	1,601	2,317	1,268	108	29,985	39,641	7,937	639	41,319	772
Indo-China . . . . .	...	...	...	...	21,612	24,504	...	...	27,256	...
Siam	3,973	2,504	...	...	38,321	32,745	...	...	35,265	...
Egypt . . . . .	...	...	...	...	1,202	1,590	7	7	2,127	9
<i>Importing Countries:</i>										
Germany	66	35	703	562	679	783	5,833	6,323	816	6,775
Austria	0	0	40	57	0	0	571	553	0	595
Belgium	4	13	112	132	88	73	1,329	1,164	84	1,237
Denmark	0	0	20	20	0	0	123	150	0	176
Estonia . . . . .	...	...	2	2	...	...	15	11	...	11
Irish Free State	0	0	2	4	0	0	51	46	0	53
France	40	73	915	1,195	628	750	13,252	11,651	772	12,544
Gr. Brit. and N. Irel.	11	13	185	187	159	161	2,802	2,284	172	2,396
Greece . . . . .	...	...	37	35	...	...	271	408	...	452
Hungary	0	0	53	51	0	0	348	419	0	478
Latvia . . . . .	...	...	...	...	...	...	7	29	0	29
Lithuania	0	0	0	2	0	0	15	18	0	18
Norway	0	0	9	2	0	0	99	68	0	77
Netherlands	183	115	66	302	1,733	1,202	3,558	3,400	1,288	3,483
Poland	9	24	2	31	141	170	974	1,415	203	1,415
Portugal . . . . .	...	...	11	53	...	...	558	653	...	723
Sweden . . . . .	...	...	15	0	...	...	214	104	...	104
Switzerland	0	0	40	53	0	0	355	525	0	575
Czechoslovakia	0	0	134	84	0	0	1,329	1,160	0	1,292
Yugoslavia	0	0	37	99	0	0	370	498	0	536
Canada	0	2	18	29	4	18	703	606	18	620
Chile . . . . .	...	...	...	...	...	...	251	137	...	174
Ceylon	0	0	922	913	2	2	9,941	9,182	2	10,119
China . . . . .	...	...	...	...	143	150	14,129	25,433	139	28,521
Java and Madura	18	9	...	...	130	159	159	2,346	159	2,344
Japan	26	26	0	412	1,433	346	152	3,142	362	3,142
Syria and Lebanon	0	0	18	55	0	0	359	364	0	397
Turkey . . . . .	...	...	...	...	...	...	...	...	49	49
Algeria . . . . .	...	...	...	...	...	15	315	163	18	220
Tunis . . . . .	...	...	...	...	...	...	53	22	0	29
Union of South Afr. . . . .	...	...	...	...	...	...	875	794	0	1,032
Australia	22	9	0	15	231	165	46	49	174	51
New Zealand . . . . .	...	...	...	...	...	...	66	68	0	73
Totals	6,323	5,843	4,673	4,438	101,895	108,108	67,609	74,215	116,518	80,940
Linseed. — Thousand cents (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Lithuania	40	33	0	0	110	99	0	0	132	0
Argentina	1,382	1,325	...	...	26,758	27,752	...	...	30,691	...
India	245	794	0	0	5,849	6,810	0	0	7,791	0
Tunis . . . . .	...	...	...	...	...	...	2	2	2	0
<i>Importing Countries:</i>										
Germany	0	0	397	448	2	29	6,718	7,452	29	7,899
Belgium	2	4	260	75	64	64	1,612	2,590	68	2,754
Denmark . . . . .	...	...	0	13	...	...	335	390	...	428
Spain . . . . .	...	...	33	15	...	...	295	335	...	359
Estonia	11	0	0	7	13	0	4	24	0	29
Finland	0	0	7	7	0	0	97	79	0	88
France	0	0	181	240	7	7	4,956	5,450	7	5,827
Gr. Brit. and N. Irel.	15	0	262	478	31	4	3,979	5,084	4	5,534
Greece	0	0	4	13	0	0	104	123	0	134
Hungary	2	0	0	9	0	4	0	31	7	...
Italy	0	0	152	106	0	0	1,340	1,512	0	1,673
Latvia . . . . .	...	...	...	...	...	...	55	71	75	35
Norway	0	0	11	31	...	...	326	390	0	406
Netherlands	0	0	730	137	73	42	6,230	6,354	44	6,550
Poland	0	0	0	0	0	2	170	287	2	287
Sweden . . . . .	...	...	22	33	...	...	827	747	...	776
Czechoslovakia	0	0	44	42	0	2	485	395	2	423
Yugoslavia	0	0	11	0	0	0	134	82	0	82
Canada	0	0	0	53	4	344	441	64	344	84
United States . . . . .	...	...	417	1,063	...	...	6,914	7,471	...	7,729
Japan	0	0	24	46	2	0	406	419	0	472
Australia	0	0	24	22	0	0	549	478	0	487
Totals	1,697	2,156	2,579	2,829	32,953	35,196	35,979	39,828	39,198	42,087

1) 2) 4) See notes page 67.

COUNTRIES	NOVEMBER				ELEVEN MONTHS (January 1-Nov. 30)				TWELVE MONTHS (January 1-Dec. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1934	1933	1934	1933	1934	1933	1934	1933	1933	1933
Butter. — (Thousand lb.).										
<i>Exporting Countries:</i>										
Austria	441	346	0	2	5,807	2,194	157	159	2,194	161
Denmark	23,100	26,363	0	44	305,489	306,170	24	778	332,269	838
Estonia	1,587	1,343	0	2	21,162	19,478	0	4	20,336	4
Irish Free State	1,687	1,011	0	2	56,039	44,955	82	20	45,232	20
Finland	1,393	2,319	0	328	22,633	24,374	13	1,376	26,211	1,407
Hungary	752	714	0	0	8,367	7,361	0	0	8,038	0
Latvia	—	—	—	—	30,360	31,032	1)	0	34,657	0
Lithuania	1,400	1,153	0	—	20,340	20,075	0	0	21,120	0
Norway	112	0	0	31	456	772	2	141	904	141
Netherlands	4,142	3,217	183	165	75,771	59,386	955	1,301	62,554	1,446
Poland	862	498	2	0	9,698	3,382	9	24	3,547	24
Sweden	3,620	3,902	0	2	47,605	34,181	4	73	37,759	73
U. S. S. R.	—	—	—	—	26,707	18,422	—	—	82,023	—
Argentina	2,784	4,480	—	—	15,161	26,835	—	—	30,660	—
India	20	29	75	64	187	185	545	476	225	527
Syria and Lebanon	26	29	15	157	293	179	725	1,755	192	1,755
Australia	34,297	34,353	0	0	219,486	179,278	0	2	211,532	2
New Zealand	35,303	35,601	—	—	271,586	259,187	—	—	295,143	—
<i>Importing Countries:</i>										
Germany	0	2	17,703	13,195	7	18	114,709	117,066	20	130,391
Belgium	4	15	2,368	2,269	101	719	18,292	24,471	725	27,353
Spain	2	2	4	2	13	20	141	13	20	15
France	816	653	262	851	6,715	6,281	9,489	18,162	6,790	20,307
Gr. Brit. and N. Irel.	1,208	1,087	66,309	71,789	11,852	10,108	1,007,933	898,186	10,933	989,696
Greece	—	—	68	51	—	—	613	529	—	604
Italy	7	18	95	507	258	789	3,677	3,980	833	3,946
Switzerland	0	0	4	11	0	2	644	994	2	1,144
Czechoslovakia	0	29	0	214	22	110	2,002	1,162	110	1,495
Canada	37	534	9	0	395	4,359	2,862	1,371	4,438	1,378
United States	44	159	183	31	1,246	1,034	873	961	1,268	1,021
Ceylon	—	—	57	82	—	—	626	578	—	642
Java and Madura	—	—	—	—	—	—	8,391	8,503	—	10,044
Japan	—	—	4	7	—	—	53	220	—	236
Algeria	—	—	—	—	7	13	3,283	3,034	18	4,120
Egypt	—	—	—	—	71	240	639	578	254	721
Tunis	—	—	—	—	7	4	1,724	1,274	4	1,687
Totals	110,644	115,837	87,341	89,806	1,157,841	1,061,143	1,178,467	1,087,191	1,240,011	1,201,198
Cheese. — (Thousand lb.).										
<i>Exporting Countries:</i>										
Bulgaria	522	384	0	0	2,366	2,357	0	0	2,579	0
Denmark	1,038	1,563	4	11	12,531	20,245	68	71	22,218	77
Finland	844	924	20	4	7,555	8,369	33	29	9,207	33
Italy	6,471	5,179	692	811	50,903	47,622	9,610	9,363	52,342	9,952
Lithuania	119	176	0	0	1,768	1,528	2	4	1,662	4
Norway	366	384	24	24	4,125	3,673	181	163	3,818	192
Netherlands	10,882	11,715	77	95	124,524	131,589	1,389	736	140,900	809
Poland	853	99	40	26	3,124	483	511	381	540	421
Switzerland	3,188	4,277	194	469	36,537	42,452	4,879	3,287	45,321	3,781
Czechoslovakia	231	291	161	227	1,823	2,723	2,423	2,657	2,665	2,917
Yugoslavia	456	322	7	9	3,827	2,926	51	64	3,228	71
Canada	14,198	14,346	146	123	58,242	67,759	875	902	74,168	968
Australia	1,786	1,784	7	7	9,996	9,517	71	53	10,911	57
New Zealand	20,781	20,245	—	—	201,139	194,900	1)	0	222,313	4
<i>Importing Countries:</i>										
Germany	150	236	5,688	7,033	1,872	3,523	67,698	84,611	3,876	90,923
Austria	357	608	99	101	3,463	4,478	1,572	1,960	4,736	2,094
Belgium	22	40	4,103	4,367	337	333	43,727	45,448	348	48,378
Spain	4	7	271	309	119	162	2,196	2,114	644	2,489
Irish Free State	132	26	—	—	483	60	60	342	68	346
France	3,080	2,396	2,835	3,349	23,257	22,791	32,113	42,957	25,034	46,105
Gr. Brit. and N. Irel.	551	606	32,022	26,702	5,377	5,761	310,183	309,385	6,155	338,069
Greece	15	333	35	11	1,135	1,252	214	710	1,444	750
Hungary	15	2	0	0	126	49	0	11	55	11
Portugal	—	—	62	57	—	—	408	445	—	529
Sweden	—	—	185	108	—	—	1,096	875	—	1,014
United States	141	108	5,730	4,989	1,362	1,321	43,967	43,874	1,409	48,398
India	0	0	150	101	2	2	1,023	968	2	1,069
Java and Madura	—	—	—	—	—	—	1,407	1,444	—	1,729
Syria and Lebanon	112	18	101	227	534	44	1,056	1,354	46	1,640
Algeria	—	—	—	—	86	95	8,170	7,815	139	9,894
Egypt	—	—	—	—	88	101	5,315	4,766	126	6,177
Tunis	—	—	—	—	84	60	2,286	2,180	71	2,888
Totals	56,314	66,069	52,657	49,171	556,785	576,175	542,584	568,973	636,025	621,769

1) 2) 3) See notes page 67.

COUNTRIES	NOVEMBER				FOUR MONTHS (August 1-Nov. 30)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1934	1933	1934	1933	1934	1933	1934	1933	1933-34	1933-34

Cotton. — Thousand cents (1 cental = 100 lb.).

<i>Exporting Countries:</i>										
United States . . .	3,111	4,965	42	66	10,415	18,124	194	214	40,971	747
Argentina . . .	60	4	—	—	280	150	—	—	450	—
Brazil . . .	—	—	—	—	972	77	—	—	1,305	—
India . . .	661	496	95	44	2,434	1,803	317	267	12,791	972
Egypt . . .	—	—	—	—	1,709	1,614	—	—	8,927	—
<i>Importing Countries:</i>										
Germany . . .	104	104	428	794	390	474	1,748	3,181	1,235	9,539
Austria . . .	0	0	64	62	2	0	220	229	2	666
Belgium . . .	82	44	176	134	209	183	677	617	553	1,768
Denmark . . .	—	—	22	20	—	—	75	64	—	190
Spain . . .	4	0	225	165	9	9	542	653	35	2,698
Estonia . . .	0	0	13	7	0	0	42	29	0	88
Finland . . .	0	0	46	37	2	0	115	90	2	249
France . . .	46	29	445	805	260	134	1,470	2,601	423	7,101
Gr. Brit. and N. Irel.	55	55	999	1,640	220	205	3,743	4,888	606	14,266
Greece . . .	0	0	9	11	0	0	42	46	0	163
Hungary . . .	0	0	57	46	0	0	174	165	0	509
Italy . . .	0	0	328	351	2	4	970	1,455	7	4,716
Latvia . . .	—	—	—	—	1	1	26	18	0	408
Norway . . .	0	0	4	2	0	0	18	13	0	53
Netherlands . . .	0	0	95	99	0	7	295	291	7	988
Poland . . .	0	0	148	148	4	2	496	545	4	1,519
Portugal . . .	—	—	37	37	—	—	128	143	—	498
Sweden . . .	—	—	82	66	—	—	196	190	—	661
Switzerland . . .	0	0	60	64	0	0	179	179	0	597
Czechoslovakia . . .	9	11	165	172	33	37	569	560	97	1,845
Yugoslavia . . .	0	0	29	18	0	0	105	71	0	289
Canada . . .	—	—	185	191	—	—	441	496	—	1,506
China . . .	—	—	—	—	123	229	459	558	847	2,835
Japan . . .	104	18	985	1,288	220	97	4,698	4,332	384	17,163
Algeria . . .	—	—	—	—	2	2	0	2	2	7
Totals . . .	4,236	5,726	4,739	6,268	17,286	23,149	17,940	21,897	68,648	71,741

Wool. = (Thousand lb.).

					THREE MONTHS (September 1-Nov. 30)				TWELVE MONTHS (Sept. 1-August 31)	
	1934	1933	1934	1933	1934	1933	1934	1933	1933-34	1933-34
<i>Exporting Countries:</i>										
Irish Free State . . .	1,365	2,169	97	60	3,536	6,550	254	183	16,810	697
Hungary . . .	476	51	168	234	1,001	514	600	664	6,270	2,286
Argentina . . . { a)	14,249	24,635	—	—	26,941	38,266	—	—	260,459	—
{ b)	2,110	1,422	—	—	4,206	3,366	—	—	15,959	—
Chile . . .	—	—	—	—	53	955	2	0	27,174	4
India . . .	3,538	7,128	225	243	10,216	17,756	1,019	608	54,798	4,072
Syria and Lebanon . . .	862	146	18	115	2,017	1,054	53	298	4,799	324
Algeria . . .	—	—	—	—	750	734	150	170	9,270	2,350
Egypt . . .	—	—	—	—	152	0	0	0	2,721	57
Un. of S. Africa . . . { a)	28,539	42,585	—	—	39,048	74,309	0	0	228,426	0
{ b)	582	679	—	—	1,133	1,664	97	93	6,228	1,519
Australia . . . { a)	88,642	136,542	170	20	220,780	313,143	586	829	703,392	7,035
{ b)	5,606	8,869	4	24	17,269	21,233	42	40	65,852	342
New Zealand . . . { a)	3,120	4,237	—	—	4,354	11,625	0	0	228,155	0
{ b)	1,565	1,878	—	—	6,151	7,057	2	4	47,120	15
<i>Importing Countries:</i>										
Germany . . . { a)	620	99	10,770	18,821	3,651	683	26,149	38,630	2,899	285,918
{ b)	130	922	2,917	4,090	774	2,932	6,594	13,234	5,935	62,340
Austria . . .	141	51	1,292	2,399	747	73	2,533	4,877	688	18,045
Belgium . . . { a)	7,412	9,890	11,334	15,510	15,704	28,363	26,070	37,699	96,175	173,077
{ b)	1,468	3,382	284	802	3,691	7,945	877	1,881	24,134	3,463
Denmark . . .	53	29	558	302	95	64	1,598	1,627	225	3,031
Spain . . .	873	260	154	46	767	1,038	1,202	1,545	4,367	7,132
Finland . . .	7	2	503	511	49	7	1,475	1,528	42	5,615
France . . .	3,964	6,204	21,577	24,147	11,676	14,659	37,933	63,654	51,035	374,902
Gr. Brit. and N. Irel.	17,928	20,421	47,580	62,708	49,130	72,517	100,734	133,726	335,375	843,540
Greece . . .	82	4	448	174	236	128	897	1,369	1,369	4,612
Italy . . . { a)	86	33	1,173	2,809	247	190	6,124	15,937	1,243	142,633
{ b)	139	190	567	1,973	467	853	2,950	5,318	4,092	21,129
Norway . . .	93	161	212	205	340	428	586	653	1,779	2,332
Netherlands . . . { a)	860	412	414	875	1,232	1,056	1,237	1,728	4,482	9,081
{ b)	214	243	589	487	540	489	1,658	2,379	1,398	6,570
Poland . . .	11	148	1,900	3,988	46	503	4,176	8,054	745	38,111
Sweden . . .	—	—	1,770	1,922	—	—	4,797	4,716	—	22,882
Switzerland . . .	2	22	2,198	955	64	53	3,955	3,552	247	20,130
Czechoslovakia . . .	119	215	2,227	2,674	688	648	5,992	6,524	2,507	35,285
Yugoslavia . . .	234	2	822	357	437	97	1,781	1,283	320	6,260
Canada . . .	639	1,232	620	1,499	2,099	5,919	1,552	4,189	8,155	18,495
United States . . .	40	304	4,965	15,997	324	379	21,381	56,939	4,405	156,050
Japan . . .	0	24	20,192	26,312	37	62	32,928	42,124	381	202,370
Tunis . . .	—	—	—	—	49	104	49	117	996	377
Totals . . .	185,469	274,592	135,748	190,259	430,717	638,024	298,620	455,703	2,230,427	2,486,081

COUNTRIES	NOVEMBER		FIVE MONTHS (July 1-Nov. 30)		TWELVE MONTHS (July 1- June 30)	COUNTRIES	NOVEMBER		FIVE MONTHS (July 1-Nov. 30)		TWELVE MONTHS (July 1- June 30)
	1934	1933	1934	1933	1933-34		1934	1933	1934	1933	1933-34
Coffee. — (Thousand lb.).						Tea. — (Thousand lb.)					
EXPORTS.						EXPORTS.					
<i>Exporting Countries:</i>						<i>Exporting Countries:</i>					
Brazil . . . . .	...	...	1) 598,557	1) 726,130	2,097,337	Ceylon	15,009	15,016	82,206	73,187	210,494
India	276	1,464	2,026	3,565	20,563	China . . . . .	...	...	1) 45,327	1) 42,560	104,153
Java and Madura	5,573	5,172	37,439	29,948	64,360	India	42,856	47,307	199,052	196,437	311,611
<i>Importing Countries:</i>						Java and Madura	10,346	9,173	44,419	39,518	107,044
Germany	9	31	53	93	234	Japan	1,936	3,483	19,072	17,705	31,720
Belgium	11	40	62	95	284	<i>Importing Countries:</i>					
France	0	0	4	55	71	Belgium	2	0	4	0	9
Gr. Britain and N. Ireland	1,541	2,529	6,292	13,034	33,217	Irish Free State	2	4	243	13	159
Netherlands	1,179	1,773	5,060	5,946	18,470	France	2	7	11	15	40
Portugal	194	192	1,027	1,153	3,278	Gr. Britain and N. Ireland	7,575	8,587	30,783	41,363	78,736
Switzerland	4	22	386	176	351	Netherlands	7	4	51	53	146
Canada	4	4	24	22	57	United States	22	64	403	192	1,706
United States	1,272	3,095	5,183	10,604	25,212	Syria and Lebanon	0	0	0	0	2
Ceylon	0	0	2	2	7	Algeria . . . . .	...	...	2) 29	2) 9	57
Syria and Lebanon	0	0	0	0	2	Union of S. Africa . . . . .	...	...	18	2) 7	18
Australia	4	2	22	13	40	Australia	62	93	381	500	928
Totals	—	—	—	—	2,263,485	New Zealand . . . . .	...	...	1) 31	1) 31	106
IMPORTS.						Totals	77,819	83,738	422,030	411,590	846,929
<i>Importing Countries:</i>						<i>Importing Countries:</i>					
Germany	23,307	21,050	140,186	124,099	307,398	Germany	705	1,232	4,857	4,623	10,415
Austria	893	939	5,384	4,822	11,244	Austria	95	82	344	282	728
Belgium	7,271	9,685	42,014	45,082	109,656	Belgium	37	40	196	192	534
Bulgaria	112	110	439	370	1,074	Denmark	86	134	465	520	1,230
Denmark	4,760	4,480	24,961	22,509	57,814	Spain	33	29	112	117	359
Spain	5,009	4,295	20,798	20,596	59,739	Estonia	7	2	29	35	66
Estonia	11	11	60	84	152	Irish Free State	2,297	2,723	10,781	10,734	23,464
Irish Free State	22	35	121	143	545	Finland	31	20	97	104	251
Finland	3,195	2,873	15,928	15,157	37,038	France	201	247	686	2,050	3,968
France	34,904	39,719	160,449	174,664	409,056	Gr. Britain and N. Ireland	45,347	49,917	255,307	218,086	470,574
Gr. Britain and N. Ireland	1,761	5,150	7,176	17,926	77,424	Greece	40	42	157	179	390
Greece	1,087	1,047	5,009	5,377	12,641	Hungary	97	62	309	192	381
Hungary	251	344	2,407	1,680	4,314	Italy	24	29	93	93	280
Italy	7,390	7,597	35,305	35,384	86,889	Latvia . . . . .	...	...	1) 13	1) 15	51
Latvia . . . . .	...	...	9) 53	278	359	Lithuania	13	4	37	29	84
Lithuania	42	18	161	146	359	Norway	31	26	146	146	381
Norway	2,421	2,180	12,745	13,746	37,366	Netherlands	2,572	2,339	14,052	11,987	25,942
Netherlands	5,964	12,264	29,211	63,562	137,461	Poland	342	306	1,444	1,792	3,719
Poland	4,252	1,757	6,089	7,871	16,852	Portugal	40	33	163	172	478
Portugal	1,149	1,373	7,011	5,300	12,035	Sweden	84	86	375	375	884
Sweden	8,739	8,739	40,098	36,759	96,759	Switzerland	130	137	657	679	1,576
Switzerland	2,754	2,619	11,155	12,143	32,058	Czechoslovakia	123	139	520	406	902
Czechoslovakia	1,625	2,112	9,339	10,296	23,177	Yugoslavia	66	49	205	201	388
Yugoslavia	1,067	1,402	5,467	6,389	13,823	Canada	3,450	3,369	11,539	13,444	41,246
Canada	2,344	2,795	11,535	12,531	36,110	United States	7,668	6,418	38,700	47,327	87,691
United States	134,820	110,606	594,571	618,295	1,598,178	Chile . . . . .	...	...	1) 615	1) 456	2,156
Chile . . . . .	...	...	1,797	1,213	4,394	Syria and Lebanon	31	40	181	143	271
Ceylon	328	46	1,442	1,823	3,150	Turkey . . . . .	...	...	...	...	4) 772
Japan	580	547	2,657	2,392	6,124	Algeria . . . . .	...	...	2) 873	2) 933	3,863
Syria and Lebanon	88	362	789	1,184	2,368	Egypt . . . . .	...	...	1) 5,602	1) 5,329	15,166
Turkey . . . . .	...	...	...	4) 4,932	29,518	Tunis . . . . .	...	...	2) 1,193	2) 600	1,781
Algeria . . . . .	...	...	2) 7,379	2) 7,414	17,604	Union of S. Africa . . . . .	...	...	2) 3,102	2) 3,351	11,636
Egypt . . . . .	...	...	1) 4,815	1) 7,152	29,313	Australia	4,372	4,045	19,368	21,848	46,260
Tunis . . . . .	...	...	1) 1,019	1,085	5,057	New Zealand . . . . .	...	...	1) 2,859	1) 3,940	11,407
Un. of S. Africa . . . . .	...	...	2) 6,832	2) 8,087	492	<i>Exporting Countries:</i>					
Australia	141	273	897	1,673	492	China . . . . .	...	...	1) 265	1) 1,282	677
New Zealand . . . . .	...	...	95	165	2	India	425	809	1,656	3,109	4,414
<i>Exporting Countries:</i>						Java and Madura . . . . .	...	...	1) 825	1) 765	2,019
India	0	0	0	0	2	Totals	68,347	72,359	377,823	354,536	776,404
Totals	253,487	244,428	1,215,350	1,286,992	3,285,738						

1) 2) 4) See notes page 67.

COUNTRIES	NOVEMBER		TWO MONTHS (Oct. 1-Nov. 30)		TWELVE MONTHS (Oct. 1-Sept. 30)	COUNTRIES	NOVEMBER		FOUR MONTHS (Aug. 1-Nov. 30)		TWELVE MONTHS (August 1-July 31)		
	1934	1933	1934	1933	1933-34		1934	1933	1934	1933	1933-34		
Cacao. — (Thousand lb.).						Total Wheat and Flour *) (Thousand centals).							
EXPORTS.						a) NET EXPORTS.							
Exporting Countries:						Exporting Countries:							
Granada	8)	2,123	8)	2,476	9,612	Germany	5)	1,276	5)	2,842	2,716
Dominican Republ.	8)	6,726	8)	5,957	49,518	Bulgaria	0	306	0	1,164	2,685
Brazil	1)	28,067	1)	21,308	211,552	Spain	0	7	0	18	42
Ecuador	8)	5,276	8)	2,676	37,278	Estonia	0	0	0	0	0
Trinidad	1,118	2,368	8)	2,057	8)	5,858	29,057	France	814	5)	5)	5)	5)
Venezuela	8)	10,234	8)	4,592	25,223	Hungary	858	2,319	2,476	8,195	17,452
Ceylon	805	717	8)	1,299	8)	952	8,841	Lithuania	11	2	33	18	29
Java and Madura	439	185	8)	961	8)	769	4,195	Poland	37	5)	412	5)	1,466
Cameroon	8)	5,637	8)	15,646	48,427	Rumania	0	29	0	77	139
Ivory Coast	8)	23,713	8)	8,594	78,681	Yugoslavia	414	11	1,534	236	626
Gold Coast	56,714	40,797	8)	75,934	8)	60,012	494,792	U. S. S. R.	7)	18,975
Nigeria	8)	45,440	8)	33,272	153,180	Canada	12,469	15,316	48,092	50,283	115,972
St. Thomas and Prince Is.	8)	9,603	8)	9,557	19,795	United States	5)	518	5)	1,285	16,041
Togoland	8)	1,612	8)	2,800	14,103	Argentina	8,644	2,297	37,505	19,806	87,308
Importing Countries:						Importing Countries:							
Germany	0	84	0	84	205	Algeria	688	597	3,474	2,701	7,214		
Belgium	0	0	49	0	18	French Morocco	282	639	1,594	2,198	5,135		
France	0	0	0	0	0	Tunis . . . . .	...	...	747	159	5)
Gr. Brit. and N. Irel.	2,732	430	6,206	1,393	13,492	Australia	4,575	3,358	19,943	15,205	50,651		
Netherlands	370	622	754	1,124	7,368	New Zealand . . . . .	...	...	5)	71	5)
United States	1,093	1,453	2,114	2,244	10,823	Totals	28,902	26,675	116,776	104,307	326,936		
Australia	7	0	7	0	322	b) NET IMPORTS.							
Totals	—	—	—	—	1,216,482	Germany 650 6) 3,023 6) 6)							
IMPORTS.						Austria 441 406 1,651 1,618 6,188							
Importing Countries:						Belgium 1,598 2,551 10,038 8,457 25,093							
Germany	16,689	16,019	32,503	28,557	218,563	Denmark 1,164 908 3,472 3,377 7,516							
Austria	999	899	2,482	1,839	10,282	Irish Free State 659 734 3,611 4,337 11,735							
Belgium	1,376	2,679	2,590	3,807	24,443	Finland 223 183 827 888 2,626							
Bulgaria	57	46	79	57	798	France 6) 1,254 251 3,810 10,304							
Denmark	313	463	631	809	8,468	Gr. Brit. and N. Irel. 9,570 12,293 40,371 47,556 130,547							
Spain	580	337	853	895	29,762	Greece 408 549 2,057 2,840 6,303							
Estonia	66	90	174	179	644	Italy 439 417 858 930 5,194							
Irish Free State	262	287	328	313	4,449	Latvia 0 0 0 0 0							
Finland	31	11	55	26	157	Norway 403 608 1,658 1,967 4,996							
France	7,915	8,951	14,648	21,142	94,376	Netherlands 1,246 1,329 4,189 7,560 13,510							
Gr. Brit. and N. Irel.	5,564	3,164	6,570	3,871	176,467	Poland 6) 101 6) 154 6)							
Greece	209	313	459	659	2,868	Portugal 18 44 126 157 575							
Hungary	432	514	1,019	968	6,477	Sweden 95 117 201 450 721							
Italy	1,446	1,938	3,922	3,865	18,470	Switzerland 7) 864 7) 899 7) 3,538 7) 4,270 7) 10,551							
Latvia . . . . .	...	...	1)	110	126	Czechoslovakia 0 4 9 88 104					
Lithuania	99	22	123	82	545	Total Europe 17,778 22,397 75,880 88,459 235,963							
Norway	714	300	1,102	571	5,564	United States 265 6) 284 6) 6)							
Netherlands	9,240	10,990	17,223	17,917	124,522	Chile 42 55 6) 174 6) 589							
Poland	1,349	1,360	3,014	2,840	14,253	Ceylon 42 55 6) 174 6) 589							
Portugal	95	126	168	214	1,107	China 6) 57 6) 745 6) 1,706							
Sweden	664	849	1,671	1,418	9,749	India 6) 57 6) 745 6) 1,706							
Switzerland	615	719	944	1,241	16,455	Indo-China 46 26 84 6) 112							
Czechoslovakia	1,074	1,440	3,164	3,287	23,488	Japan 46 26 84 6) 112							
Yugoslavia	128	101	282	1,537	23,488	Java and Madura 6) 18 6) 373 6) 417							
Canada	2,919	4,815	4,138	6,107	22,377	Syria and Lebanon 6) 18 6) 373 6) 417							
United States	37,439	24,423	75,864	49,838	412,610	Egypt 6) 18 6) 373 6) 417							
Japan	0	267	322	467	2,337	Tunis 6) 18 6) 373 6) 417							
Australia	187	615	388	739	16,239	Union of S. Africa 6) 18 6) 373 6) 417							
New Zealand . . . . .	...	...	1)	51	73	New Zealand 6) 18 6) 373 6) 417					
Totals	90,462	81,738	174,877	152,975	1,251,039	Totals 18,131 22,553 78,195 91,561 254,812							

*) Flour reduced to grain on the basis of the coefficient: 1000 centals of flour = 1,333,333 centals of grain.

a) Excess of exports over imports. — b) Excess of imports over exports.

1) Data up to 31 October. — 2) Data up to 30 September. — 3) Data up to 30 June. — 4) Data up to 30 November. —

5) See Net Imports. — 6) See Net Exports. — 7) Wheat only. — 8) Three months: October 1-December 31.

STOCKS OF CEREALS †

Stocks of cereals in farmers' hands in the United States.

PRODUCTS	% Stocks: total production					Stocks in 1,000 centals				
	1 Jan.,	1 Oct.,	1 Jan.,	1 Jan.,	1 Jan.,	1 Jan.,	1 Oct.,	1 Jan.,	1 Jan.,	1 Jan.,
	1935	1934	1934	1933	1932	1935	1934	1934	1933	1932
Wheat	27.4	47.1	36.7	36.6	34.6	81,626	140,570	116,482	163,807	193,510
Oats	65.5	84.4	61.6	61.2	58.2	110,803	147,504	144,143	244,222	209,857
Maize	73.5	2) 11.3	60.5	62.4	69.8	2) 455,850	148,329	796,621	1,015,548	871,555

1) Data based on maize for grain. — 2) Old crop.

Commercial cereals in store in Canada and the United States.

SPECIFICATION	Friday or Saturday nearest to 1st of month				
	January 1935	December 1934	November 1934	January 1934	January 1933
	1,000 centals				
WHEAT:					
Canadian in Canada	138,134	138,692	142,181	136,587	141,910
U. S. in Canada	629	629	629	1,349	4,163
U. S. in the United States	54,562	59,495	65,111	79,507	101,182
Canad. in the United States	16,538	14,141	10,546	8,423	8,144
Total . . .	209,863	212,957	218,467	225,866	255,399
RYE:					
Canadian in Canada	2,220	2,223	2,264	2,255	2,792
U. S. in Canada	0	0	0	0	55
U. S. in the United States	7,040	7,518	6,901	7,692	4,476
Canad. in the United States	0	0	339	48	307
Total . . .	9,260	9,741	9,504	9,995	7,630
BARLEY:					
Canadian in Canada	5,253	5,574	6,689	5,573	3,190
U. S. in Canada	0	0	0	0	10
U. S. in the United States	8,779	9,199	8,415	8,780	4,918
Canad. in the United States	807	426	0	0	0
Total . . .	14,839	15,199	15,104	14,353	8,118
OATS: (1)					
Canadian in Canada	5,682	5,367	5,364	6,853	3,172
U. S. in Canada	37	43	52	296	372
U. S. in the United States	7,483	7,542	7,758	15,113	8,470
Canad. in the United States	0	7	85	0	0
Total . . .	13,202	12,959	13,259	22,262	12,014
MAIZE:					
U. S. in Canada	3,249	3,386	3,526	5,689	2,129
Of other origin in Canada	1,478	948	629	1,001	998
U. S. in the United States	24,501	28,093	32,750	39,502	17,172
Total . . .	29,228	32,427	36,905	46,192	20,299

1) For oats the bushel is of 32 lb.

† See also: Latest News on page 59.

Quantities of cereals on Ocean passage with first destination for Europe.

PRODUCTS	Saturday nearest to 1st of month				
	January 1935	December 1934	November 1934	January 1934	January 1933
	1,000 centals				
Wheat (and flour in terms of grain)	15,211	20,462	20,170	12,394	21,850
Rye	187	288	274	470	19
Barley	696	1,448	2,352	2,532	1,224
Oats	960	1,501	1,213	794	710
Maize	10,800	12,254	13,003	13,474	12,662

AUTHORITY: *Broomhall's Corn Trade News*

Stocks belonging to farmers in Germany.

PRODUCTS	% stocks: total production					Stocks in 1,000 centals				
	31 Dec. 1934	30 Nov. 1934	31 Oct. 1934	31 Dec. 1933	31 Dec. 1932 1)	31 Dec. 1934	30 Nov. 1934	31 Oct. 1934	31 Dec. 1933	31 Dec. 1932
Winter wheat . . .	38	49	59	45	48	33,100	42,600	51,300	48,900	46,100
Spring wheat . . .	58	66	73	70	69	7,500	8,500	9,400	10,400	9,800
Winter rye	45	55	64	47	47	74,600	91,200	106,100	89,500	85,700
Winter barley . . .	24	32	40	31	24	3,700	4,900	6,100	4,900	3,300
Spring barley . . .	48	58	71	52	46	26,600	32,100	39,300	31,600	26,300
Oats	65	73	82	68	66	78,100	87,700	98,600	104,200	96,800
Late potatoes . . .	56	65	76	54	54	515,600	598,500	699,800	487,800	—

1) Average between data for 15 December 1932 and 15 January 1933.

AUTHORITY: *Marküberichtsstelle beim Reichsnährstand* (The absolute figures are calculated by the I. I. A.).

Stocks of cereals in commercial elevators and mills in Germany.

PRODUCTS	Last day of the month				
	December 1934	November 1934	October 1934	December 1933	December 1932
	1,000 centals				
WHEAT:					
Grain	37,690	36,083	35,614	25,446	15,527
Flour for bread	3,252	3,062	2,789	3,249	3,078
TOTAL 1)	42,207	40,336	39,488	29,959	19,802
RYE:					
Grain	27,445	23,270	22,340	19,709	12,921
Flour for bread	2,463	2,233	2,328	1,998	1,795
TOTAL 1)	31,067	26,555	25,764	22,648	15,560
BARLEY	5,377	5,203	5,439	5,706	4,237
OATS	1,896	1,660	1,217	2,167	2,253

1) Including flour in terms of grain, on the basis of the coefficient: 1,000 centals of wheat flour = 1,388.89 centals of wheat
1,000 centals of rye flour = 1,470.59 centals of rye.

Grain and flour stocks at the ports of Great Britain and Ireland 1).

PRODUCTS	First day of the month				
	January 1935	December 1934	November 1934	January 1934	January 1933
	1,000 centals				
WHEAT:					
Grain	8,808	8,112	7,584	10,464	3,840
Flour as grain	864	744	792	1,008	672
TOTAL	9,672	8,856	8,376	11,472	4,512
BARLEY	1,000	1,200	1,120	1,660	660
OATS	160	203	256	624	432
MAIZE	5,760	4,560	3,888	1,248	2,976

1) Imported cereals.

AUTHORITY: *Broomhall's Corn Trade News*.

Commercial stocks of cereals in Antwerp, Rotterdam and Amsterdam 1).

PRODUCTS AND LOCATION	Saturday nearest to 1st of month 2)				
	January 1935	December 1934	November 1934	January 1934	January 1933
	1,000 centals				
WHEAT:					
Antwerp	2,285	2,299	2,650	1,183	1,281
Rotterdam	1,662	1,464	1,436	2,340	...
Amsterdam	19	27	29	23	13
RYE:					
Antwerp	162	144	160	302	125
Rotterdam	198	203	172	187	...
Amsterdam	0	3	0	4	7
BARLEY:					
Antwerp	196	244	391	531	393
Rotterdam	126	220	192	992	...
Amsterdam	6	4	13	126	50
OATS:					
Antwerp	63	85	93	30	46
Rotterdam	51	94	76	19	...
Amsterdam	24	25	28	21	33
MAIZE:					
Antwerp	203	89	311	114	56
Rotterdam	254	375	551	110	...
Amsterdam	60	74	124	18	73

1) Imported cereals. See note on p. 306 of the *Crop Report* of April 1934. — 2) For Antwerp the data refers to the last day of the preceding month, for Amsterdam to the first day of the month indicated.AUTHORITIES: *Nederlandsche Silo-, Elevator- en Graanfactor Mij*, Amsterdam, and *Chamber of Commerce and Industry for Rotterdam, Rotterdam*.

Carry-over of wheat and oats in New Zealand.

SPECIFICATION	30 November 1934	30 November 1933	30 November 1932	30 November 1931
	1,000 centals			
WHEAT (in grain):				
milling	2,006	2,005	729	859
other than milling	406	325	86	253
in stack for threshing	5	5	1	1
TOTAL	2,417	2,335	816	1,113
WHEAT FLOUR:	286	277	270	221
GRAND TOTAL 1)	2,829	2,734	1,204	1,431
OATS:				
in grain	462	580	337	299
in stack for threshing	22	98	8	12
TOTAL	484	678	345	311

1) Including flour in terms of grain, on the coefficient: 1,000 centals of flour = 1,440 centals of grain.

STOCKS OF COTTON

Stocks of cotton on hand in the United States.

LOCATION	Last day of the month				
	December 1934	November 1934	October 1934	December 1933	December 1932
	1,000 centals				
In consuming establishments	6,403	6,373	5,614	8,072	7,521
In public storage and at compresses . . .	47,535	48,294	46,252	50,737	50,917
TOTAL . . .	53,938	54,667	51,866	58,809	58,438

Stocks of cotton at Bombay and at Alexandria.

PORTS	Thursday nearest to 1st of month				
	January 1935	December 1934	November 1934	January 1934	January 1933
	1,000 centals				
Bombay 1)	2,084	1,977	2,436	2,633	2,091
Alexandria 2)	2,399	2,029	1,947	3,303	4,154

1) Stocks held by exporters, dealers and mills. — 2) From February 1934 quantities consumed in Alexandria as well as those returned to the interior of the country are not included; prior to this date quantities returned to the interior are included.

AUTHORITIES: *East Indian Cotton Ass.* and *Commission de la Bourse de Minet-el-Bassal.*

Stocks of cotton in Europe.

LOCATION, DESCRIPTION	Thursday or Friday nearest to 1st of month				
	January 1935	December 1934	November 1934	January 1934	January 1933
	1,000 centals				
<i>Great Britain:</i>					
American	1,355	1,224	1,306	2,617	2,361
Argentine, Brazilian, etc.	1,019	1,028	1,039	251	202
Peruvian, etc.	615	566	574	500	367
East Indian, etc.	196	237	280	156	335
Egyptian, Sudanese	1,203	1,247	1,181	1,381	1,201
W. Indian, W. and E. African, Australian	245	280	286	220	78
TOTAL . . .	4,633	4,582	4,666	5,125	4,544
<i>Bremen:</i>					
American	1,287	1,346	1,404	2,837	2,388
Other	265	277	281	84	56
TOTAL . . .	1,552	1,623	1,685	2,921	2,444
<i>Le Havre:</i>					
American	697	634	580	1,278	1,214
French colonies	36	21	30	29	8
Other	105	106	93	45	33
TOTAL . . .	838	761	703	1,352	1,255
<i>Total Continent 1):</i>					
American	2,558	2,425	2,371	5,210	4,386
Argentine, Brazilian, etc.	202	147	131	50	23
E. Indian, Australian, etc.	173	192	208	108	88
Egyptian	220	173	116	158	120
W. Indian, W. African, E. African, etc. .	211	247	255	88	28
TOTAL . . .	3,364	3,184	3,081	5,614	4,645

1) Includes Bremen, Le Havre, and other Continental ports.

AUTHORITIES: *Liverpool Cotton Ass.* and (for Le Havre) *Bulletin de correspondance de la Bourse du Havre.*

WEEKLY PRICES BY PRODUCTS

(All quotations are, unless otherwise stated, for spots. The monthly averages are based on weekly quotations, the annual averages on the monthly)

DESCRIPTION	18	11	4	28	21	AVERAGE					Commercial Season		
	Jan.	Jan.	Jan.	Dec.	Dec.	Dec.	Jan.	Jan.					
	1935	1935	1935	1934	1934	1934	1934	1933			1933-34	1932-33	
Wheat.													
Budapest: Tisza region, 78 kg. p. hl. (pengő p. quintal)	17.02	16.90	16.62	16.54	16.27	16.39	7.70	14.15	9.70	13.73			
Braila: Good quality (1el p. quintal)	n. q.	n. q.	n. q.	n. q.	n. q.	450	n. q.	n. q.	375	535			
Winnipeg: No. 1 Manitoba (cents p. 60 lb.)	79	79 1/8	79 1/4	79 3/4	78 1/8	79 3/8	60 3/4	44 3/4	67 1/8	54 1/4			
Chicago: No. 2 Hard Winter (cents p. 60 lb.)	105 1/2	n. 107	108 1/2	n. 104 1/2	105	107	88 1/2	48 1/4	89 1/8	59 1/4			
Minneapolis: No. 1 Northern (cents p. 60 lb.)	110 1/8	112 1/4	111 1/8	111 1/8	110	112 1/2	87 3/8	48 3/8	89 3/8	60 3/8			
New-York: No. 2 Hard Winter (cents p. 60 lb.)	116 1/4	118	116 1/4	116 5/8	114 5/8	117 1/4	98 1/8	56 1/2	98 3/4	68 3/8			
Buenos Aires (a): Barilletta, 80 kg. p. hectol. (pesos paper p. quintal)	6.35	6.40	6.25	6.40	6.45	6.47	5.75	5.60	5.85	6.09			
Karachi: Karachi white, 2% barley 1 1/2 % dirt (rupees p. 65 lb.)	25-4-0	23-15-0	23-6-0	22-15-0	23-0-0	23-1-0	21-13-9	30-5-0	22-2-4	28-4-2			
Berlin: Home grown (free at Brandenburg stations; Rm. p. quintal) 1)	20.30	20.30	20.30	20.15	20.15	20.15	18.60	18.52	18.65	19.60			
Hamburg (c. i. f.; Rm. p. quintal):													
No. 2 Manitoba	8.88	9.10	n. q.	n. q.	9.09	9.17	7.84	8.34	7.94	8.83			
Barusso 2)	6.06	6.15	6.14	6.15	6.23	6.23	5.84	7.23	6.22	7.76			
Antwerp (francs p. quintal):													
Home-grown	...	60.00	60.00	60.50	62.00	61.25	58.35	77.25	63.00	79.70			
No. 1 Manitoba (Atlantic) (in bond)	...	75.75	75.50	75.00	76.00	75.60	60.25	70.10	67.65	74.35			
Barusso (in bond)	...	49.50	50.00	50.50	52.00	51.60	51.25	62.00	53.00	66.20			
Paris: Home-grown (delivery regional depots; frs. p. quintal) 3):													
76 kg. p. hl. crop of 1934	78.00	78.00	76.00	80.00	113.00	104.75	124.50	109.10	125.65	107.35			
76 kg. p. hl. crop of 1933	133.50	133.50	133.50	133.50	133.50	133.50	—	—	—	—			
London: Home grown (sh. p. 504 lb.) 4)	21/6	21/6	21/6	21/6	21/9	21/8 1/2	19/6	22/9	20/10	24/8 1/2			
Liverpool and London (c. i. f., parcels, shipping current month; sh. p. 480 lb.)													
German (on sample)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	17/2 1/2	21/11 1/2	17/3	23/6			
French (on sample)	18/4 1/2	18/7 1/2	18/9	18/7 1/2	18/10 1/2	19/0 1/2	n. q.	n. q.	n. q.	n. q.			
South Russian (on sample)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	17/5 1/2	25/4 1/2	19/5 1/2	26/3			
No. 1 Northern Manitoba (Atlantic)	31/1 1/2	31/7 1/2	31/3	31/3	31/2 1/2	31/2	26/4	25/4 1/2	26/9	26/8 1/2			
No. 1 Northern Manitoba (Pacific)	30/9	30/11 1/2	30/9	30/8 1/2	30/7 1/2	31/2	26-	25/2	26/7	26/4			
No. 3 Northern Manitoba (Pacific)	27/6	27/8 1/2	27/6 1/2	27/5 1/2	27/4 1/2	27/10 1/2	24/0 1/2	24/2 1/2	24/5 1/2	25/2 1/2			
White Pacific	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	21/1	n. q.	20/5	n. q.			
Rosafé (afoat) 5)	20/6	21/2 1/2	20/6 1/2	20/6 1/2	20/1 1/2	20/10 1/2	18/9 1/2	22/2	19/5 1/2	23/2			
Australian	23/3	23/6	23/-	23/3 1/2	23/3	23/3 1/2	22-	24/7	23/4	25/7			
Milan (b): Home-grown, soft, « Buono mercantile » (lire p. quint.):													
76-78 kg. p. hl., uncontrolled	94.50	94.50	92.50	91.50	91.00	91.30	* 88.65	111.75	84.10	101.80			
76 kg. p. hl. crop of 1933, from common stores 6)	—	—	—	93.70	93.70	93.70	—	—	—	—			
Genoa: Sicilian Durum (c. i. f., lire p. quint.)	111.00	111.25	110.75	110.00	110.00	109.95	* 108.35	n. q.	107.85	* 120.30			
Genoa (c. i. f.; U. S. \$ p. quintal):													
No. 2 Manitoba (Pacific)	3.07	3.13	3.13	3.52	3.19	3.32	2.96	* 1.94	2.93	2.23			
No. 2 Canadian Durum	4.04	4.10	4.10	4.09	4.06	4.17	3.10	2.25	3.11	2.59			
Plata, 80 kg. p. hl. 7)	101/6	99/-	99/-	101/-	99/-	100/-	* 90/4	* 1.68	* 92/10	* 1.83			
Rye.													
Berlin: Home-grown (free at Brandenburg stations; Rm. p. quintal) 1)	16.30	16.30	16.30	16.15	16.15	16.15	15.30	15.17	15.34	15.52			
Hamburg (c. i. f.; Rm. p. quintal): Plata 8)	5.81	5.89	5.89	6.07	6.14	6.12	4.30	5.89	4.76	* 5.98			
Budapest: Home-grown (pengő p. quintal)	13.15	12.65	12.40	12.40	12.15	12.25	4.01	6.14	5.24	6.77			
Warsaw: Good quality (zloty p. quint.)	14.75	14.75	14.75	14.75	14.75	14.62	14.50	15.93	14.32	18.06			
Winnipeg: No. 2 (cents p. 56 lb.)	53 3/4	56 1/4	58 1/4	59 1/4	57 3/4	59 1/4	45 3/4	29 1/4	47 1/4	37 1/4			
Minneapolis: No. 2 (cents p. 56 lb.)	72 1/4	77 1/4	77 1/4	78 1/4	77 1/4	79 1/4	61 1/4	32 1/4	63	41 1/4			
Groningen (c): Home-grown (fl. p. quint.)	7.45	7.50	7.45	7.45	7.45	7.45	7.08	3.92	6.30	3.92			

* Indicates that the product during part of the period under review was not quoted. — n. q. = not quoted. — n. = nominal. — a) Thursday prices. — b) Saturday prices. — c) Prices of preceding Tuesday.

1) 1 Oct. 1933-15 Aug. 1934 for wheat and 1 Oct. 1933-15 July 1934 for rye: minimum prices; subsequently: fixed producers prices for the price region of Berlin town. See also Bull. of Agric. Economics and Sociology, Aug. 1934, p. 342. — 2) Aug.-Dec. 1932: 80 kg. p. hl. year 1933: 79 kg.; subsequently: 80 kg. — 3) 16 July 1933-25 December 1934: minimum prices on the farm increased by transport costs from farm to Paris stations. From 1 August 1934 a considerable percentage of old crop wheat has to be used in the flour for breadmaking. — 4) From Aug. 1933: prices on the farm. — 5) August-Dec. 1932: 64 lb. p. bushel; Jan.-Oct. 1933: 63 1/2 lb.; Nov.-Dec. 1933: 63 lb.; subsequently: 64 lb. — 6) In connection with the law concerning wheat for breadmaking, millers are obliged to buy a considerable percentage of this wheat at a fixed price from the organizations for the stocking of wheat. — 7) From Feb. 1934: prices in sh. 1000 kg. — 8) Aug.-Oct. 1932: 74-75 kg. p. hl.; subsequently: 72-73 kg. — 9) No. 1 Manitoba. — 10) 14 Dec.: 76.50; 7 Dec.: 75.00. — 11) New crop. — 12) Afoat. — 13) N. 1. Canadian Durum. — 14) Price on 31 December.

DESCRIPTION	18	11	4	28	21	AVERAGE				
	Jan.	Janr.	Jan.	Dec.	Dec.	Dec.	Jan.	Jan.	Commercial	
	1935	1935	1935	1934	1934	1934	1934	1933	Season	
1933-34 1932-33										
Barley.										
Warsaw: Malting, good quality (zloty p. quintal)	22.25	22.25	21.25	20.75	20.75	20.69	15.25	16.37	* 15.87	* 17.11
Braila: Average quality (lei p. quintal)	n. q.	297	264	250	265	256	150	n. q.	* 154	* 186
Prague: Malting, av. qual. (crs. p. quintal)	132.50	132.50	132.50	131.00	131.00	131.00	83.75	79.00	* 94.20	* 83.30
Winnipeg: No. 4 Western (cents p. 48 lb.)	45 1/4	48 1/8	48 3/4	50 5/8	49 5/8	51 1/4	36 7/8	25 1/2	36 7/8	29 3/4
Chicago: Feeding (on sample; cents p. 48 lb.)	n. 82	n. 91	n. 89	n. 87 1/2	n. 87	n. 86	60 1/2	27	54	33 3/4
Minneapolis: No. 2 Feeding (c. p. 48 lb.)	79	82	81	82	80	82	48	21 1/2	45 1/8	27 7/8
Berlin: Home-grown fodder (free at Brandenburg stations; Rm. p. quint.)	16.20	16.20	16.20	16.05	16.05	16.05	16.07	16.10	* 16.17	* 16.58
Antwerp: Danubian (in bond; francs p. q.)	...	66.00	67.00	67.00	67.50	67.35	47.75	53.10	49.35	55.50
London: English malting, best quality (sh. p. 448 lb.)	37/6	37/6	37/6	37/6	40/-	39/4 1/2	40/-	35/6	* 39/5 1/4	* 35/-
Liverpool and London (c.i.f., parcels; shipping current month; sh. p. 400 lb.):										
Danubian 3 %	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	12/10 1/2	n. q.	* 13/9 1/2	* 16/7
Russian (Azow-Black Sea)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	* 13/3 1/2	* 16 1/2	* 13/7 1/4	* 16/5
No. 3 Canadian Western	23/11 1/4	24/9	24/-	23/10 1/2	23/10 1/2	24/1 1/4	* 17/7	19/3	17/9 1/4	18/3
Californian malting (sh. p. 448 lb.)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. 22/10 1/2	22/4 1/2	22/7 1/4	22/8
Plata (64-65 kg. p. hl)	19/-	18/7 1/2	18/3	* 18/7 1/2	* 19/-	* 19/4 1/2	12/8 1/2	16/-	14/2 1/2	* 15/9 1/2
Persian	* 19/3	20/-	20/3	20/6	20/6	20/6 1/4	12/11	17/7	* 14/0 1/4	* 16/4
Groningen a): Home grown, winter (fl.p.q.)	5.60	5.60	5.60	5.62	5.62	5.63	4.06	4.60	4.44	4.40
Oats.										
Braila: Good quality (lei p. quintal)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	148	n. q.	* 148	* 195
Winnipeg: No. 2 White (cents per 34 lb.)	45	44	43 1/4	44 1/4	44	44 1/2	33 1/2	22 1/4	33 1/4	26 1/2
Chicago: No. 2 White (cents per 32 lb.)	58 1/4	59	59	58	55 1/2	57	38 1/2	17 1/4	37 1/4	21 1/4
Buenos Aires b): Current quality (pesos paper p. quintal)	5.10	5.05	4.90	5.05	5.00	5.10	3.36	4.00	3.65	4.43
Berlin: Home grown (free at Brandenburg stations; Rm. p. quint.)	16.40	16.40	16.40	16.25	16.25	16.25	14.17	11.34	14.92	13.05
Paris: Home grown, black and other (delivery regional depots; frs. p. quintal)	45.00	44.75	44.50	45.00	45.15	46.10	46.20	80.00	48.00	76.30
London: Home grown white (sh. p. 336 lb.)	20/6	20/6	20/6	20/6	20/6	20/6	* 18/10	18/-	18/1 1/2	18/6
Liverpool and London (c.i.f., parcels; shipping current month; sh. p. 320 lb.):										
Danubian 5)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	* 10/5 1/2	* 14/3
Canadian, No. 2 Western 6)	* 21/-	21/3	20/10 1/2	20/9	20/9	20/11 1/2	* 16/8 1/2	16/7	* 17/4	* 16/9
Plata (f.a.q.)	12/6	12/6	12/6	* 12/3	* 12/7 1/2	* 12/8	* 9/2 1/4	12/1 1/2	10/2	12/9
Chilian Tawny	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	* 10/7 1/2	n. q.
Milan (c) (lire p. quintal):										
Home grown	57.50	57.50	57.50	57.50	57.50	57.50	* 52.00	67.50	50.70	62.80
Foreign	56.00	56.00	56.00	57.50	57.50	57.50	* 51.85	58.75	50.05	57.10
Maize.										
Braila: Average quality (lei p. quintal)	n. q.	n. q.	n. q.	186	230	199	171	n. q.	* 214	* 160
Chicago: No. 2 Mixed (cents p. 56 lb.)	n. 90	n. 93	n. 94 1/2	n. 93 1/2	n. 88 1/2	n. 93 1/4	50	24	58	37 1/4
Buenos Aires (b): Yellow Plata (pesos paper p. quintal)	5.85	6.15	6.10	6.00	6.25	6.32	4.47	4.39	5.30	4.00
Antwerp (in bond; francs p. quintal):										
Bessarabian	...	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	51.50	n. q.	* 49.05
Yellow Plata	...	55.00	53.50	53.00	55.00	54.75	47.60	52.75	51.25	49.50
Cinquantino (Argentine "Cuarentino")	...	57.00	57.00	58.00	59.50	59.50	53.25	68.85	56.50	64.90
Liverpool and London (c.i.f., parcels; shipping current month; sh. p. 480 lb.):										
Danubian	n. 20/9	21/7 1/4	21/1 1/2	21/-	21/-	21/3	* 16/7 1/2	18/7 1/2	* 18/11 1/4	16/11 1/4
Yellow Russian	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	* 16/8
White Russian	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	18/9 1/2	18/-	* 18/4 1/2	* 17/6
Yellow Plata	20/1 1/2	21/4 1/2	21/7 1/2	20/6	20/9	21/1 1/2	16/7 1/2	18/10	18/7 1/4	16/10
No. 2 White flat African	* 22/6	* 23/4 1/2	23/-	24/-	n. q.	* 23/4 1/2	n. q.	18/4 1/2	* 22/4 1/4	* 17/11
Milan (c): "Alto Milanese" (lire p. quint.)	58.00	58.00	57.00	55.00	54.00	54.25	* 50.00	57.75	53.50	51.65

* Indicates that the product, during part of the period under review, was not quoted. — n. q. = not quoted. — n. = nominal. — a) Prices of preceding Tuesday. — b) Thursday prices. — c) Saturday prices.

1) From August 1934: monopoly price, paid to producers, for delivery Prague. See also Bull. of Agric. Econ. and Soc., Nov. 1934, p. 512 — 2) From 16 July 1934 for fodder barley and from 1 August 1934 for oats: fixed producers' prices for the price region of Berlin town. See also Bull. of Agric. Econ. and Soc., Aug. 1934, p. 342. — 3) July-August 1933: two rowed winter barley, Sept. 1933-June 1934: spring barley, average quality. — 4) From Aug. 1933: prices on the farm. — 5) Aug. 1933-July 1933: 39-40 lb. p. bush; subsequently: 35-36 lb., 5 % dirt. — 6) Aug. 1932 - May 1934: Pacific; subsequently: Atlantic. — 7) Price in Costanza. — 8) New crop; shipping Jan.-Feb. — 9) Shipping February. — 10) Price on 31 December.

DESCRIPTION	18	11	4	28	21	AVERAGE					Commercial Season	
	Jan.	Jan.	Jan.	Dec.	Dec.	Dec.	Jan.	Jan.				
	1935	1935	1935	1934	1934	1934	1934	1933		1934	1933	
Rice (milled)												
Valencia (a): No. 3 Belloch (pesetas p. quintal)	55.50	55.50	55.00	54.50	54.50	54.75	45.25	46.75	46.95	43.10		
Milan (b) (lire p. quintal):												
Vialone, oiled	148.50	148.50	148.50	148.50	151.00	151.10	* 200.00	184.60	177.10	198.20		
Maratelli, oiled	127.00	127.00	127.00	127.00	127.50	127.40	* 150.00	138.60	138.05	139.90		
Originario, white	102.50	102.50	102.50	102.50	101.50	101.60	* 106.00	101.25	102.80	95.50		
Rangoon: No. 2 Burma (rupees p. 7500 lb.)	215	210	202 1/2	205	202 1/2	210	176 1/2	206 1/2	201 1/2	194 1/2		
Saigon (Indo-chinese piastres p. quintal):												
No. 1 Round white, 25 % broken . . . . .	...	...	...	3.39	3.39 1/2	3.45	3.13	4.31	3.25	4.08		
No. 2 Japan, 40 % broken . . . . .	...	...	...	3.26	3.26 1/2	3.30	2.97	4.15	3.09	3.90		
Marseilles (a): No. 1 Saigon (c. i. f.; frs. p. quintal)	45.00	41.00	43.00	46.50	44.00	45.35	45.25	58.25	45.95	53.10		
London (a) (c. i. f.; shillings p. cwt.):												
No. 3 Spanish Belloch, oiled	12/3	12/-	12/1 1/2	n. q.	n. q.	*13/-	11/3 3/4	13/8 1/4	*10/9	12/5 1/4		
No. 6 Italian good, oiled	13/9	13/6	13/6	n. q.	12/9	*12/9	12/3	14/-	11/10 1/2	11/2 1/4		
American Blue Rose, extra fancy	17/3	17/-	17/-	n. q.	16/10 1/2	*16/10 1/2	17/3	14/8 1/4	17/3 1/2	16/9 1/4		
No. 2 Rangoon or Bassein (Burma)	6/11 1/2	6/9 3/4	6/6 3/4	n. q.	6/6 3/4	*6/7 1/2	5/11 1/2	7/1 1/2	6/7 3/4	6/6 3/4		
No. 1 Saigon	6/14 1/2	6/3	6/7 1/2	n. q.	6/6	*6/8	5/8 1/2	7/4 1/2	6/3 1/2	6/9 3/4		
Siam Super, white	7/6	7/4 1/2	7/6	n. q.	7/6	*7/6 1/2	6/11 3/4	7/10 1/2	7/5	8/1 1/2		
Tokio: Chumai (brown Japanese, average quality, yen p. koku)	29.30	29.00	28.70	28.80	28.70	29.07	* 22.73	23.55	26.09	21.62		
Linseed.												
Buenos Aires (a): Current quality (pesos paper p. quintal)	11.90	12.00	11.65	11.55	11.70	11.80	11.57	9.21	12.74	10.56		
Antwerp: Plata (in bond; frs. p. quint.)	...	101.00	100.00	103.00	103.00	102.75	106.00	103.35	107.60	111.70		
London (c. i. f.; £ p. long ton):												
Plata (delivery Hull)	9-12-6	9-10-0	9-7-6	9-6-3	9-7-6	9-10-0	9-7-2	8-16-7	10-0-8	9-11-11		
Bombay bold	12-15-0	12-7-6	12-2-6	11-16-3	11-16-3	11-18-1	11-4-1	11-10-7	11-17-0	11-5-4		
Duluth: No. 1 Northern (quotations of terminal market; cents p. 56 lb.)	187	187	187	188 1/2	187	188 3/4	185	114 1/4	186 1/2	156 1/4		
Cottonseed.												
Alexandria:Sakellaridis (piastres p. ardeb)	73.4	n. 69.6	64.0	60.9	58.2	59.8	37.4	74.2	38.6	60.7		
London:Sakellaridis (c. i. f., delivery Hull; £ p. long ton)	7-11-3	7-0-0	6-11-3	6-3-9	5-18-9	6-0-7	4-4-8	7-10-4	4-6-10	6-3-9		
Cotton.												
New Orleans: Middling (cents p. lb.)	12.61	12.72	12.89	12.88	12.77	12.79	10.86	6.14	10.90	7.27		
New York: Middling (cents p. lb.)	12.60	12.70	12.85	12.85	12.75	12.77	11.15	6.25	11.07	7.38		
Bombay: M. g. Broach f. g. (terminal market quotations; rup. p. 784 lb.)	249	244	243	242	232	231 1/2	197 1/2	200	197	201 1/2		
Alexandria (talariis p. kantar):												
Sakellaridis, f. g. f.	16.45	16.10	16.05	16.00	15.95	16.05	15.15	13.52	14.44	14.15		
Ashmuni-Zagora, f. g. f.	14.02	14.07	14.02	14.02	13.72	13.74	11.64	12.13	11.63	12.46		
Bremen: Middling (U. S. cents p. lb.)	14.59	14.80	14.77	14.62	14.65	14.63	12.50	7.29	12.56	8.54		
M. g. Broach, f. g. (pence p. lb.)	n. 6.50	n. 6.10	n. 6.10	n. 6.20	n. 5.90	n. 5.97	n. 4.77	n. 4.56	n. 4.81	n. 4.81		
Le Havre: Middling (Gulf; frs p. 50 kg.)	260.00	261.00	260.00	260.00	263.00	260.00	230.00	223.50	229.85	237.75		
Liverpool (pence per lb.):												
Middling, fair	n. 8.20	n. 8.23	n. 8.28	n. 8.25	n. 8.20	n. 8.16	n. 6.96	n. 6.41	n. 7.11	n. 6.76		
Middling	7.15	7.18	7.23	7.20	7.15	7.11	5.91	5.26	6.02	5.61		
São Paulo, g. f.	7.25	7.23	7.18	7.17	7.12	7.08	6.10	5.51	6.13	5.87		
M. g. Broach, f. g.	5.88	5.91	5.88	5.84	5.71	5.69	n. 4.46	n. 4.87	n. 4.62	n. 5.01		
Egyptian Sakellaridis, f. g. f.	9.09	9.01	8.98	8.94	9.00	9.01	8.43	7.40	8.07	7.77		

* Indicates that the product, during part of the period under review, was not quoted. — n. q. = not quoted. — n. = nominal. — a) Thursday prices. — b) Saturday prices.

1) 14 Dec.: 3.48; 7 Dec.: 3.54. — 2) 14 Dec.: 3.31; 7 Dec.: 3.38. — 3) New crop; shipping Jan.-Febr. — 4) New crop; shipping Febr.-March. — 5) New crop. — 6) May future. — 7) April-May future.

DESCRIPTION	18	11	4	28	21	AVERAGE			Commercial Season	
	Jan.	Jan.	Jan.	Dec.	Dec.	Dec.	Jan.	Jan.		
	1935	1935	1935	1934	1934	1934	1934	1933	1934	1933
Bacon.										
London, Provision Exchange (a) (shill. p. cwt.):										
English, No 1, lean sizable	92/-	90/-	88/-	90/-	89/-	89/3	92/4	...	91/2	...
Danish, No 1, sizable	88/-	86/-	86/-	86/-	86/-	86/-	87/9	55/3	87/11	74/5
Irish, No 1, sizable	91/-	87/6	87/6	87/6	87/6	87/-	90/3	63/-	90/5	83/4
Lithuanian, No 1, sizable	81/-	78/-	78/-	81/-	81/-	81/-	81/-	43/1	82/-	65/5
Dutch, No 1, sizable	87/-	84/-	84/-	84/-	84/-	84/-	83/-	45/9	84/-	67/6
Polish, No 1, sizable	79/-	76/-	74/6	80/-	80/-	80/-	79/-	42/6	80/11	63/10
Swedish, No 1, sizable	86/-	83/-	79/6	80/-	83/-	82/9	85/-	49/6	84/4	70/-
Canadian, No 1, sizable	75/-	72/-	71/6	77/-	76/6	75/10	81/-	46/-	80/3	64/6
Butter.										
Copenhagen (b): Danish (cvs. p. quint.) . .	204.00	200.00	210.00	210.00	210.00	214.50	139.75	159.25	160.75	171.00
Leeuwarden, Commission for butter quotations (b): Dutch (cents p. kg.) . . .	60	60	60	57	55	54 1/4	49 1/2	72	44 3/4	60
Zutphen, auction: Dutch (price for home consumption; cents p. kg.) 1) . . .	153	153	153	155	153	155 1/4	152	164 1/4	147 1/4	159 1/4
Hamburg (c): Schleswig-Holstein butter, with qual. mark (Rm. p. 50 kg.) 2)	130.00	130.00	130.00	130.00	130.00	130.00	129.59	97.16	129.04	112.72
Kempten (c): Allgäu butter (Rm. p. 50 kg.) 2) 3)	123.00	123.00	123.00	123.00	123.00	123.00	123.00	87.00	120.87	106.25
London (d): English creamery, finest quality (shillings p. cwt.)	119/-	114/4	109/8	109/8	109/8	109/8	109/8	154/-	109/6	140/10
London, Provision Exchange (a) (shill. p. cwt.):										
Danish creamery, unsalted	118/-	116/-	120/-	121/6	122/-	123/1	89/4	110/-	98/8	103/9
Estonian, unsalted	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	* 90/-	* 67/11	* 84/4
Latvian, unsalted	n. q.	103/-	n. q.	n. q.	n. q.	n. q.	* 77/-	* 92/4	* 69/3	* 82/9
Dutch creamery, unsalted	113/-	113/-	n. q.	n. q.	105/-	* 99/8	94/-	117/6	80/4	103/4
Argentine, finest, unsalted	n. q.	n. q.	71/-	72/6	70/6	70/9	64/9	81/-	* 68/3	* 77/10
Siberian, salted	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	60/9	n. q.	* 66/-	* 73/5
Australian, finest, salted	80/-	81/6	75/6	74/6	69/6	70/7	63/6	79/6	70/2	80/-
New Zealand, finest, salted	80/6	83/-	76/6	75/-	70/6	71/9	66/-	81/1	72/7	81/1
Cheese.										
Milan (lire p. quintal):										
Parmigiano-Reggiano, 1st quality, production 1932 4)	695.00	705.00	725.00	725.00	725.00	727.00	1,015.00	1,253.00	989.00	1,234.00
Parmigiano - Reggiano, 1st quality, production 1933 4)	595.00	595.00	605.00	605.00	615.00	612.00	845.00	1,012.00	806.00	1,015.00
Green Gorgonzola, mature, choice . .	410.00	415.00	415.00	415.00	415.00	415.00	401.00	589.00	412.60	473.70
Rome: Roman Pecorino, choice (lire p. q)	662.00	662.00	662.00	662.00	662.00	674.00	712.00	1,250.00	658.65	1,029.00
Alkmaar: Edam 40 + (40 % butterfat, with the country's cheesemark) factory cheese, small (florins p. 50 kg.) . .	18.00	18.00	17.50	18.00	18.00	18.75	22.00	25.37	20.98	22.40
Gouda: Gouda 45+ (whole milk cheese, with the country's cheesemark) home made (florins p. 50 kg.)	20.00	20.00	19.50	19.50	20.00	20.75	26.06	29.62	22.52	26.59
Kempten (c) (Rpf. p. 1/2 kg.):										
Soft cheese, green, 20 % butterfat . .	26	26	26	26	26	26	24 1/2	18	23 1/4	20 7/8
Emmenthal from the Allgäu, whole milk cheese, 1st quality	73	73	73	73	73	73	71	74 1/2	71 1/2	72 1/2
London, Provision Exchange (a) (shill. p. cwt.):										
English Cheddar, finest farmers . . .	86/-	86/-	86/-	86/-	86/-	86/-	92/-	101/3	* 83/5	86/3
English Cheshire, officially graded 5)	92/2	87/6	86/4	86/4	93/6	91/-	120/2	110/3	83/4	94/4
Italian Gorgonzola (d)	80/6	81/8	81/8	81/8	84/-	82/6	81/11	103/1	82/9	85/3
Dutch Edam, 40 + (d)	44/6	44/-	45/-	45/-	44/6	46/7	70/7	65/2	54/5	59/8
Canadian, finest white	58/-	59/-	56/6	55/6	55/6	55/4	49/-	64/3	54/-	59/8
New Zealand, finest white	45/9	48/6	47/-	46/6	43/9	44/8	44/9	47/4	46/5	46/10

* Indicates that the product, during part of the period under review, was not quoted. — n. q. = not quoted. — n. = nominal — a) Average prices of Thursday and Friday morning. — b) Thursday prices. — c) Wednesday prices. — d) Average prices for the week.

1) From April 1934: minimum prices; see note on page 306 of the *Crop Report* of April 1934. — 2) The method of quotation was changed in June 1933; see note on page 425 of the *Crop Report* of June 1933. — 3) Prices of cheese made in 1932 are compared, for the preceding years, with those of cheese made in 1931 and in 1930 respectively; prices of 1933 cheese with those of cheese made in 1932 and 1931. The yearly averages refer to periods from Sept. to August. — 4) From May 1934 onwards: National Mark, selected. — 5) Argentine fine.

DESCRIPTION	18	11	4	28	21	AVERAGE					
	Jan.	Jan.	Jan.	Dec.	Dec.	Dec.	Jan.	Jan.	Commercial		
	1935	1935	1935	1934	1934				1934	1933	Season
									1934	1933	
Eggs (fresh).											
Antwerp, auction: Belgian, average qual. (fms. p. 100) 1)	43.00	48.00	46.00	45.00	43.00	45.75	50.75	55.50	42.80	48.40	
Denmark (a): Danish for export (crs. per quintal)	100.00	110.00	110.00	126.00	126.00	146.80	115.00	111.00	103.60	105.85	
Roermond, auction: Dutch, 57/58 gr. each, white (fl. p. 100) 2):	...	4.90	4.90	4.90	4.90 ^{a)}	5.00	4.70	4.12	3.96	3.48	
Fixed price for export in Germany. . . Price for other destinations . . .	...	3.00	3.20	3.50	4.50 ^{a)}	4.37	4.70	4.12	3.34	3.48
Warsaw (b): Polish, average weight 50 gr. each, different colours (zloty p. 1440, including box)	...	...	...	140.00	140.00 ^{a)}	140.00	188.75	179.40	106.50	123.60
Berlin (c): German, National mark "Gr-S" big, newly laid (Rm. p. 100)	12.00	12.00	12.00	12.00	12.00	12.00	12.62	10.06	10.37	10.41	
London, Egg Exchange (d) (sh. p. great hundred):											
English, National mark, specials . . .	16/1 ¹ / ₂	15/7 ¹ / ₂	17/6	n. q.	19/10 ¹ / ₂	* 20/9 ¹ / ₂	16/9	16/7 ¹ / ₂	15/5	13/10 ¹ / ₂	
Belgian, 15 1/2 lb. p. 120	n. q.	n. q.	n. q.	n. q.	12/9	* 14/6	* 12/-	* 12/2	* 11/0 ¹ / ₂	* 11/1	
Danish, 18 lb. p. 120	13/6	13/-	14/-	n. q.	16/9	* 16/11 ¹ / ₂	14/3	15/1 ¹ / ₂	12/5 ¹ / ₂	12/9 ¹ / ₂	
North Irish, 18 lb. p. 120	15/1 ¹ / ₂	14/6	15/6	n. q.	19/-	* 19/4 ¹ / ₂	15/9 ¹ / ₂	15/10 ¹ / ₂	* 13/6 ¹ / ₂	15/1	
Dutch, all brown, 18 lb. p. 120 . . .	n. q.	13/9	15/6	n. q.	7/6	* 16/3	n. 16/-	* 16/3 ¹ / ₂	13/5	* 14/0 ¹ / ₂	
Polish, 57/54 grams each 3)	14/-	n. q.	8/3 ¹ / ₂	n. q.	8/9	* 8/8 ¹ / ₂	8/2	* 10/0 ¹ / ₂	6/10 ¹ / ₂	* 7/4 ¹ / ₂	
Chinese, violet	8/4 ¹ / ₂	8/4 ¹ / ₂	8/7 ¹ / ₂	n. q.	8/9	* 8/9	8/6 ¹ / ₂	10/6 ¹ / ₂	* 8/3 ¹ / ₂	* 9/10	
Australian, 16 lb. p. 120	10/4 ¹ / ₂	9/10 ¹ / ₂	10/7 ¹ / ₂	n. q.	12/1 ¹ / ₂	* 12/1	11/6	12/0 ¹ / ₂	* 11/5 ¹ / ₂	* 12/4 ¹ / ₂	
Maritime freights 4).											
Shipments of Wheat and Maize.											
									1935-34	1932-33	
Danube to Antwerp/Hamburg. (shill. per Black Sea to Antwerp/Hamb. long ton)	n. q.	n. q.	n. 13/6	n. 13/6	n. 13/6	n. 13/9	n. q.	n. q.	* 14/1	* 13/9	
St. John to Liverpool 5)	10/4 ¹ / ₂	10/4 ¹ / ₂	10/4 ¹ / ₂	10/3	10/3	10/0 ¹ / ₂	10/9	11/-	10/3	10/-	
Port Churchill to United Kingdom	1/6	1/6	1/6	1/6	1/6	1/6	1/9	1/6	* 1/11	* 1/7	
Montreal to United Kingdom. (shill. per 480 lb.)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	* 2/9	* 3/-	
Gulf to United Kingdom 5)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	* 1/4 ¹ / ₂	* 1/8 ¹ / ₂	
New York to Liverpool 5)	2/6	2/6	2/6	2/6	2/6	2/6	2/6	2/-	2/6 ¹ / ₂	2/-	
Northern Range to U.K./Cont.	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	
North Pacific to United Kingdom (sh. per long ton)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	11) * 0.06	* 1/9	12) * 0.06	
Vancouver to Yokohama 5) (U.S.A. \$ per 2000 livres)	18/-	18/6	18/6	19/-	19/-	19/-	20/1	23/6	20/1	20/10	
La Plata Down River 6) (Ne-cocha/Bahia Blanca to U. K./Continent	14/6	15/6	15/6	15/6	15/-	14/11	15/-	16/1	14/1	14/-	
La Plata Up River 7) to U. K./Continent	16/-	17/-	17/-	17/-	16/9	16/7 ¹ / ₂	16/10 ¹ / ₂	17/6	15/9	15/10	
Western Australia to U. K./Continent	24/9	25/-	25/-	25/6	25/6	25/4 ¹ / ₂	25/-	27/4 ¹ / ₂	23/10 ¹ / ₂	24/6 ¹ / ₂	
Shipments of Rice.											
									1934	1933	
Saigon to Europe (shill. per Burma to U. K./Continent long ton)	n. 24/6	n. q.	n. q.	25/-	25/-	25/-	24/11	27/3	24/2 ¹ / ₂	23/5 ¹ / ₂	
	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	* 23/3	* 23/1 ¹ / ₂	

* Indicates that the product, during part of the period under review, was not quoted. — n. q. = not quoted. — n. = nominal. — a) Average prices for weeks beginning on Fridays indicated. — b) Average prices for weeks beginning on preceding Mondays. — c) Thursday prices. — d) Prices of preceding Monday.

1) Jan.-June 1932: Rates at Hasselt auction. — 2) See note on p. 307 of the *Crop Report* of April 1934. — 3) From Nov. 1933, 57/52 grams each. — 4) Rates for entire cargoes; see note on p. 307 of the *Crop Report* of April 1934. — 5) Rates for parcels by liners. — 6) "Down River" includes the ports of Buenos Aires and La Plata. — 7) "Up River" includes the ports on the Parana River as far as San Lorenzo. Cargoes from ports beyond San Lorenzo (Colastine, Santa-Fé and Paraná) are subject to an extra rate of freight. — 8) See note on page 84. — 9) Weeks from 3 to 15 Dec.: 140.00. — 10) Eggs of 17 lb. p. 120. — 11) For eggs of 17 1/2 lb. p. 120. — 12) Freight in U. S. A. \$ per 100 lb. — 13) Canadian \$.

AVERAGE MONTHLY PRICES BY COUNTRIES ¹⁾

GROUPS	DESCRIPTION	AVERAGE							Agricultural year 2)	
		Dec.	Nov.	Oct.	July-Sept.	Oct.-Dec.	Oct.-Dec.	1933-34	1932-33	
		1934	1934	1934	1934	1933	1932			
GERMANY (Prices in Reichsmarks per quintal)										
A I	†Wheat (Berlin) 3)	16.15	16.00	15.80	15.70	14.83	15.51	15.26	15.77	
	†Rye (Berlin) 3)	16.05	15.90	15.70	15.43	16.42	16.53	16.17	16.57	
	†Barley, feeding (Berlin) 3) 4)	16.25	16.10	15.90	16.24	14.30	12.89	14.62	13.25	
	†Oats (Berlin) 3)	4.80	4.80	4.80	* 5.63	2.71	2.62	* 3.04	* 2.67	
	†Red potatoes (Berlin)	79.20	75.20	73.00	70.07	63.07	60.40	64.67	64.42	
A II	†Beef, live weight (Berlin)	66.00	68.80	72.80	65.07	71.47	72.80	68.55	71.36	
	†Veal, live weight (Berlin)	96.80	101.40	101.80	92.80	96.27	81.93	85.03	77.40	
	†Pork, (220-265 lb.), live weight (Berlin)	14.50	14.50	14.50	14.50	13.85	13.85	14.12	13.84	
	†Milk, fresh (Berlin)	260.00	261.00	262.00	259.50	258.54	235.26	253.38	212.92	
	†Butter (Hamburg)	146.00	146.00	144.50	142.00	142.00	255.83	142.25	153.00	
	†Cheese, Emmenthal variety (Kempten)	12.00	12.00	11.06	9.68	13.12	12.72	10.78	9.95	
	†Fresh eggs (Berlin) (per 100)									
B I	Basic slag (Aachen) 5)	0.220	0.212	0.265	0.265	0.251	0.225	0.254	0.240	
	§Superphosphate of lime 18 % (Hildesheim) 5)	0.301	0.301	0.314	0.314	0.318	0.310	0.316	0.308	
	§Potash salts 38-42 % (mise stations) 5)	6.64	6.65	6.72	6.168	6.169	6.170	6.167	6.168	
	§Sulphate of Ammonia 5)	0.670	0.660	0.650	0.630	0.660	0.700	0.676	0.726	
	Nitrate of lime 5)	0.930	0.930	0.930	0.920	0.930	0.930	0.952	0.952	
B II	Wheat bran (Hamburg)	11.97	11.90	11.80	12.17	11.38	8.19	11.06	8.74	
	Linseed cake (Hamburg)	15.30	15.30	15.30	16.62	17.26	10.12	16.67	10.68	
	Coconut cake (Hamburg)	15.30	15.30	15.30	16.81	17.30	10.20	16.58	10.91	
	Groundnut cake (Hamburg)	14.50	14.50	14.50	16.13	16.06	10.87	15.89	11.14	
	Crushed soya extraction residue (Hamburg)	13.00	13.00	13.00	14.82	14.34	10.09	14.49	10.03	

DENMARK (Prices in Danish crowns per quintal)

A I	Wheat (Copenhagen)	11.58	11.84	12.02	13.08	10.58	10.61	* 11.96	* 11.65	
	Barley (Copenhagen)	14.00	13.75	13.95	14.39	11.35	11.33	* 12.13	* 11.89	
	Oats (Copenhagen)	13.25	13.25	13.50	13.68	11.90	10.53	12.12	11.30	
A II	†Pork, live weight	156.00	158.00	160.00	162.93	128.55	81.00	141.00	96.89	
	†Butter (Copenhagen)	214.50	209.20	189.00	165.37	192.30	183.53	161.05	168.20	
	†Eggs	146.80	192.50	150.00	102.33	159.00	154.50	101.05	105.47	
B I	Superphosphate 18 %	6.25	6.15	6.07	6.12	6.12	5.62	6.28	5.94	
	Potash salts 40 %	11.75	11.35	11.35	11.93	13.48	13.44	13.67	13.51	
	Sulphate of ammonia	15.35	15.15	14.99	15.40	14.95	13.63	15.29	13.85	
	Nitrate of lime	15.30	15.10	14.94	15.30	14.80	13.65	15.13	13.92	
B II	Rye, imported (Jutland)	12.20	11.27	11.66	12.67	9.25	9.12	9.50	9.68	
	Maize, Flate (Jutland)	12.40	11.65	11.77	13.03	11.00	9.45	11.72	9.75	
	Wheat bran, Danish (Copenhagen)	11.34	11.05	11.19	10.76	10.20	9.02	* 10.03	9.20	
	Cottonseed cake (Copenhagen)	15.57	15.12	14.80	13.73	13.43	13.12	13.07	13.09	
	Sunflower-seed cake (Copenhagen)	15.50	15.17	14.48	13.61	13.57	13.14	12.55	13.21	
	Groundnut cake (Copenhagen)	15.25	14.80	14.88	14.03	14.03	15.01	13.63	15.02	
	Crushed soya extraction residue (Copenhagen)	14.20	13.97	14.36	13.83	13.38	14.91	12.97	14.53	

* , †, §: See notes on page 80.

¹⁾ Each quarter a list is published for several countries containing prices of plant (A I) and animal (A II) products sold by the farmer as well as of fertilizers (B I) and of concentrated feeding stuffs for livestock (B II) bought by the farmer. In the case where the market is not indicated, the price is the average one for the country. The prices paid to farmers for sugar beet are generally fixed once a year and therefore are not inserted in these tables. — 2) July to June. — 3) See note 1) on p. 72 and p. 73 of this *Crop Report*. — 4) See note 3) on page 73 of this *Crop Report*. — 5) Prices per unit of fertilizer material in a metric quintal. — 6) Price per 100 kg. of potash manure salt 40 %, free at buyer's station. — 7) Rectified price Sept.: 15.10. — 8) Rectified price Sept.: 15.10 — 9) Rectified price Sept.: 14.30. — 10) Rectified price Sept.: 12.80

GROUPS	DESCRIPTION	AVERAGE							Agricultural year	
		Dec.	Nov.	Oct.	July-Sept.	Oct.-Dec.	Oct.-Dec.	1933-34	1932-33	
		1934	1934	1934	1934	1933	1932			
FRANCE (Prices in francs per quintal)										
A I	†Wheat (Paris) 1)	104.75	112.00	111.00	118.50	122.00	113.10	124.00	112.50	
	Rye (Paris)	65.00	63.00	62.00	64.00	69.00	79.50	72.25	80.15	
	Malting barley (Paris)	67.00	70.00	70.00	67.35	82.00	87.00	79.25	84.40	
	†Oats (Paris)	46.10	53.05	54.25	56.20	48.55	85.75	48.55	80.75	
	§Wine, red, 10° (Montpellier) (hectol.)	52.00	52.00 ²⁾	56.00 ²⁾	96.35 ³⁾	107.15 ⁴⁾	113.00 ⁿ	100.00 ⁿ	130.00	
A II	†Beef, dead weight (2nd quality) (Paris).	438.00	487.00	516.00	534.00	548.00	619.00	531.00	607.00	
	†Mutton, dead weight (Paris)(2nd quality).	983.00	1,040.00	1,066.00	1,069.00	1,031.00	1,053.00	1,099.00	1,096.00	
	†Pork, live weight (Paris)	330.00	374.00	406.00	418.00	569.00	715.00	522.00	705.00	
B I	§Basic slag, 18 % (Thionville)	22.50	22.50	22.50	22.50	22.50	22.50	22.50	22.70	
	§Superphosphate 14 % (North and East)	26.75	26.75	26.75	26.75	27.25	25.00	27.25	26.30	
	§Sylvinit, minimum 12 % 2)	15.00	15.00	15.00	15.00	16.30	11.25	16.30	10.60	
	Nitrate of soda (Dunkirk)	83.50	82.50	81.50	80.00	87.60	93.65	87.75	92.25	
	Sulphate of ammonia 20.4 %	86.00	85.00	85.00	85.00	90.85	95.25	89.80	94.30	
B II	Linseed cake (North).	72.50	73.00	73.25	72.50	63.15	71.00	65.25	68.30	
	Coconut cake (Marseilles) ⁵⁾	60.00 ⁵⁾	60.50 ⁵⁾	62.00	61.35	60.00	66.50	60.00	66.35	
	Groundnut cake (Marseilles)	51.50	50.00	50.00	52.50	55.00	70.35	53.35	66.25	

GREAT BRITAIN (A: Prices in shillings and pence per cwt;

B: Prices in pounds sterling, etc. per long ton)

A I	Wheat	4/10 ^{1/4}	4/11	5/0 ^{1/4}	5/2	4/7 ^{3/4}	5/5 ^{1/4}	4/11	5/7 ^{3/4}
	Fodder barley	8/6 ^{1/4}	8/10	9/5 ^{1/4}	8/2 ^{1/4}	9/7	7/5 ^{1/4}	8/9 ^{1/4}	7/1
	Oats	6/8 ^{1/4}	6/7 ^{1/2}	6/6 ^{1/2}	6/5 ^{1/4}	5/4 ^{1/4}	5/11 ^{1/4}	5/9 ^{1/4}	6/2 ^{1/4}
A II	†Potatoes (London)	5/1 ^{3/4}	5/6 ^{1/2}	5/8 ^{3/4}	* 6/8	4/7 ^{1/2}	5/2	* 4/8 ^{1/4}	4/10 ^{1/4}
	†Beef, dead weight (London)	64/1	62/5	64/5	69/1	62/2	64/4 ^{1/4}	64/6	70/-
	†Mutton, dead weight (London)	88/4	84/7	83/5	96/11	79/9	68/10	86/-	79/2
	†Pork, dead weight (London)	89/6	87/5	87/9	78/5	88/3	71/4	83/4	71/5
	Butter (London)	109/8	109/8	106/10	112/6	137/4	154/-	123/1	148/8
	†Cheese, Cheddar (London)	86/-	85/-	85/-	74/8	87/3	99/7	82/3	96/1
B I	§Basic slag 14 % (London)	2-3-0	2-3-0	2-3-0	2-3-0	2-3-0	2-3-0	2-3-0	2-3-0
	Superphosphate, 16 % (London)	2-16-0	2-16-0	2-16-0	2-16-0	2-16-0	2-16-0	2-16-0	2-16-0
	Kainite 14 % (London)	2-14-0	2-14-0	2-14-0	2-16-0	3-0-0	3-5-0	3-1-2	3-5-4
	§Nitrate of soda, 15 1/2 % (London)	7-12-0	7-12-0	7-12-0	7-14-0	7-16-0	8-10-4	7-16-4	8-14-4
	§Sulphate of ammonia 20.6 % (London)	7-0-0	6-19-0	6-17-0	6-18-4	7-2-0	5-12-8	7-0-3	5-18-8
B II	Bran, British (London)	6-5-0	6-9-0	6-11-7	5-16-7	5-2-7	5-15-2	5-2-10	5-7-10
	Bran, middlings, imported (London)	6-2-0	6-4-6	6-13-7	5-18-1	4-16-2	5-10-10	4-14-1	5-4-7
	Linseed cake, English (London)	9-2-0	9-3-3	9-18-0	9-19-1	9-4-0	8-9-2	9-3-2	8-12-0
	Cottonseed cake (London)	4-18-0	4-12-9	4-18-2	4-17-7	4-8-0	5-8-7	4-12-0	5-14-7
	Palm kernel cake (Liverpool)	6-2-0	6-0-0	6-1-7	6-1-10	5-17-0	6-2-0	5-17-5	6-2-0

ITALY (Prices in lire per quintal)

A I	†Wheat, soft (Milan)	91.30	89.35	87.25	83.65	81.40	111.55	84.35	102.95
	Wheat, hard (Palermo)	106.00	105.00	105.00	99.65	103.00	124.00	104.90	120.00
	Oats (Milan)	57.50	57.50	57.50	54.30	49.85	67.50	50.70	64.40
	†Maize (Milan)	54.25	50.75	49.50	58.15	44.85	57.90	50.75	58.35
	Rice, Maratelli (Milan)	127.40	127.50	126.50	128.65	130.75	140.95	144.10	146.15
	Hemp, fibre	242.00	233.00	249.35	249.35	265.00	278.00	273.00	256.00
	§Olive oil "Soprafino locale" (Bari)	493.00	535.00	568.00	538.35	396.65	438.00	440.00	425.00
	§Wine, ordinary, 11° (Bari) (hectol.)	65.00	68.00	73.00	53.00	65.00	75.00	60.00	72.00

*, †, §: See notes on page 80.

1) See note 4) on page 72 of this *Crop Report*. — 2) From August 1933: rich sylvinit, 18 %. — 3) 10°5. — 4) 8°5. —

5) Price in Coudekerque. — 6) Sept. price: 235.00

GROUPS	DESCRIPTION	AVERAGE							
		Dec.	Nov.	Oct.	July-Sept.	Oct.-Dec.	Oct.-Dec.	Agricultural year	
		1934	1934	1934	1934	1933	1932	1933-34	1934-35
ITALY (continued)									
A II	†Beef, live weight (Milan) 1)	242.00	260.00	268.00	248.65	233.65	255.65	229.50	240.75
	Lamb, dead weight (Rome)	604.00	479.00	647.00	* 775.00	562.00	600.00	* 615.00	* 667.00
	Pork, live weight (Milan)	346.00	350.00	372.00	372.00	387.50	448.00	395.00	419.00
	†Cheese (Parmigiano-Reggiano) (Milan)	612.50	621.00	622.50	677.00	861.00	977.00	857.00	1,023.00
	Eggs, fresh (Milan) (per 100)	47.90	58.10	45.75	33.10	60.25	56.95	40.00	39.45
	Wool, Italian (Rome)	912.00	832.00	752.00	729.00	730.00	570.00	* 727.00	* 554.00
B I	Superphosphate of lime, 14-16 % (Milan)	20.35	20.35	20.35	20.45	20.55	22.50	21.10	22.15
	Chloride of potash (Milan)	63.00	63.00	63.00	63.00	69.60	70.50	66.60	70.60
	Nitrate of lime, 15-16 % (Milan)	71.80	71.80	71.05	71.65	74.80	75.50	78.45	78.05
	Sulphate of ammonia, 20-21 % (Milan)	72.15	72.15	72.15	72.75	74.60	77.20	77.40	78.75
	Cyanamide of calcium, 15-16 % (Milan)	54.75	54.75	54.75	55.15	56.90	58.15	58.70	59.70
	Copper sulphate (Genoa)	81.50	82.25	n. q.	* 86.50	* 94.80	102.00	96.85	* 103.60
B II	Wheat bran (Genoa)	44.40	40.25	39.75	46.70	32.20	35.00	34.10	31.95
	Rice bran (Milan)	41.50	38.50	36.60	38.45	25.60	36.50	27.25	34.65
	Linseed cake (Milan)	62.90	60.00	56.25	52.80	44.50	55.15	46.20	48.95
	Groundnut cake (Milan)	39.00	36.25	37.50	33.25	35.80	54.65	33.35	48.60
	Rapeseed cake (Milan)	37.60	33.50	29.75	28.10	22.40	26.85	24.75	25.00

NETHERLANDS (Prices in florins per quintal)

A I	Wheat (Groningen)	11.45	11.30	11.15	12.03	11.80	12.30	12.13	12.63	
	Rye (Groningen)	7.45	7.20	7.13	7.67	6.86	3.89	6.06	4.07	
	Barley (Groningen)	5.63	5.60	5.43	5.23	4.11	4.85	4.33	4.60	
	Oats (Groningen)	6.10	5.89	5.95	6.10	5.02	4.41	4.99	4.29	
	Peas (Rotterdam)	9.90	8.96	8.62	*8.97	9.21	14.28	*8.50	*11.69	
	Flax, fibre (Rotterdam)	51.50	49.00	43.00	43.17	48.00	45.50	48.92	48.95	
	§Potatoes (Amsterdam)	4.90	4.95	5.10	*6.07	5.00	3.64	*5.29	*2.46	
A II	†Beef, dead weight (Rotterdam)	58.00	55.50	57.00	60.00	57.33	62.83	57.71	60.96	
	†Pork, live weight (Rotterdam)	32.00	32.50	30.00	30.67	38.65	29.67	35.92	30.29	
	†Butter for export (Leeuwarden)	54.25	46.50	43.00	41.83	64.08	78.67	53.15	70.00	
	Butter for home consumption (Zutphen) 2)	153.25	149.50	146.00	144.83	160.67	155.67	154.17		
	†Cheese, Edam 40 % (Alkmaar)	37.50	40.00	41.24	43.60	44.83	54.37	42.40	47.68	
	Cheese, Gouda 45 % (Gouda)	41.50	46.80	49.24	44.17	54.08	63.73	48.64	55.72	
	†Eggs (Roermond) (per 100)	4.25	5.45	4.47	3.65	5.29	5.79	4.00	3.93	
B I	Basic slag 3)	0.103	0.106	0.111	0.110	0.124	0.141	0.120	0.125	
	Superphosphate, 17 %	1.70	1.70	1.71	1.75	1.94	1.95	1.91	1.94	
	Kainite 3)	0.068	0.068	0.068	0.068	0.079	0.148	0.090	0.145	
	Nitrate of soda 15 ½ to 16 %	6.20	6.20	6.17	6.04	*6.06	6.51	6.07	6.67	
	Sulphate of ammonia, 20 ½ %	4.95	4.95	4.92	4.74	4.69	4.60	4.72	4.62	
B II	Maize (Rotterdam)	5.30	5.06	4.98	5.36	4.72	3.57	4.53	3.66	
	Linseed cake, Dutch	6.64	6.49	6.75	6.91	6.40	5.86	6.35	5.90	
	Coconut cake	5.82	5.99	6.25	6.05	5.33	6.21	5.27	6.06	
	Groundnut cake	5.77	5.81	6.45	6.02	5.10	6.40	5.17	6.19	

POLAND (Prices in zlotys per quintal)

A I	Wheat (Warsaw)	18.75	18.83	19.91	20.04	20.80	26.03	22.09	30.46	
	†Rye (Warsaw)	14.62	14.25	17.00	16.18	14.50	15.94	14.95	18.04	
	†Barley (Warsaw)	20.69	20.25	21.87	20.40	15.33	17.06	*15.55	*17.11	
	Oats (Warsaw)	13.94	15.16	16.77	15.75	13.85	16.18	13.69	16.66	
A II	Beef, live weight (Warsaw)	59.75	61.40	64.00	65.63	68.60	66.20	67.30	67.30	
	Pork, live weight (Warsaw)	63.75	67.60	72.25	78.75	109.60	100.00	98.65	108.00	
	Butter (Warsaw)	301.00	270.00	274.00	233.70	342.00	378.40	311.00	336.00	
	†Eggs (Warsaw) (per 100)	9.72	9.03	7.73	5.79	10.12	12.54	7.99	9.36	
B I	Superphosphate 3)	0.610	0.610	0.610	0.603	0.62	0.62	0.62	0.62	
	Potash salts, 25 % 4)	8.50	8.50	8.50	8.44	10.50	12.92	11.06	12.91	
	Sulphate of ammonia 5)	20.70	20.70	20.70	20.70	25.00	25.00	23.95	25.00	
B II	Wheat bran (Warsaw)	10.25	10.25	11.00	11.60	9.60	10.10	10.67	10.78	
	Rye bran (Warsaw)	9.12	9.05	9.94	10.44	9.00	9.15	9.05	9.82	
	Linseed cake (Warsaw)	16.50	16.50	17.37	19.13	18.00	20.70	17.90	19.96	
	Rapeseed cake (Warsaw)	13.00	13.00	13.87	14.36	14.35	16.45	13.67	15.67	

*, †, §: see notes on page 80.

1) New series. — 2) Before January 1933: quotations in Maastricht (page 425 of the *Crop Report* of June 1933). — 3) Prices per unit of fertilizer material in a metric quintal. — 4) New series from July 1934 onwards: Potash salts 20 %. — 5) New series from July 1934 onwards.

GROUPS	DESCRIPTION	AVERAGE								Agricultural year	
		Dec.	Nov.	Oct.	July-Sept.	Oct-Dec.	Oct-Dec.	1933-34	1932-33		
		1934	1934	1934	1934	1933	1932				
SWEDEN (Prices in Swedish crowns per quintal)											
A I	Wheat (Stockholm)	16.62	16.22	15.87	17.08	15.98	16.65	16.94	17.46		
	Rye (Stockholm)	15.62	15.25	14.87	16.06	14.48	15.24	15.55	15.94		
	Barley (Stockholm)	12.75	12.75	* 12.75	n. q.	11.12	10.97	* 11.64	* 11.07		
	Oats (Stockholm)	11.62	11.75	11.55	11.97	10.36	8.76	11.10	8.97		
A II	Beef, live weight (Göteborg)	* 46.00	46.00	46.80	45.45	34.50	32.30	37.10	32.30		
	Pork, live weight (Göteborg)	* 60.17	58.12	58.00	56.37	45.60	61.00	49.37	61.05		
	Butter (Malmö)	230.00	230.00	230.00	230.00	246.60	194.00	228.35	176.45		
	Eggs (Stockholm)	145.20	178.00	136.80	93.87	131.45	139.00	90.47	92.50		
B I	Superphosphate, 20 %	7.80	7.80	7.80	7.80	7.80	6.45	7.51	7.65		
	Potash salts, 20 %	6.05	6.05	6.05	6.05	8.25	n. q.	8.10	7.32		
	Nitrate of soda	n. q.	n. q.	n. q.	n. q.	18.95	n. q.	18.15	* 18.95		
	Calcium cyanamide	n. q.	n. q.	n. q.	n. q.	16.50	n. q.	16.50	* 16.50		
B II	Maize, Plate	12.36	12.20	12.11	14.47	8.70	9.80	10.00	9.57		
	Wheat bran	15.65	15.35	15.12	12.28	9.38	9.55	10.35	9.31		
	Groundnut cake	16.57	16.40	16.27	15.65	14.75	15.95	14.80	15.24		
	Cottonseed cake	n. q.	* 14.96	14.47	13.85	12.70	12.30	12.70	11.99		
	Soya meal	15.85	15.78	15.81	15.39	14.05	15.15	14.08	14.25		

CZECHOSLOVAKIA (Prices in Czech. crowns per quintal)

A I	Wheat	174.20	172.40	170.60	168.15	137.65	151.35	147.00	154.20	
	Rye	137.50	136.00	134.50	132.35	91.65	105.15	96.55	99.35	
	Barley	144.75	143.25	141.75	129.90	87.15	81.35	90.35	84.50	
	Oats	122.80	121.60	120.40	126.65	66.35	78.35	73.85	78.90	
	Edible potatoes	38.00	36.50	33.50	72.85	29.00	26.50	35.35	29.00	
	Hops	4,245.00	3,990.00	3,635.00	3,775.00	4,020.00	1,760.00	3,774.00	2,106.00	
A II	Beef, dead weight	725.00	725.00	725.00	725.00	767.00	875.00	744.00	775.00	
	Veal, dead weight	575.00	725.00	575.00	550.00	650.00	817.00	644.00	754.00	
	Pork, dead weight	712.00	787.00	800.00	825.00	837.00	1,134.00	782.00	1,031.00	
	Butter	1,700.00	1,700.00	1,750.00	1,825.00	1,800.00	2,167.00	1,785.00	1,977.00	
	Fresh eggs (per 100)	59.65	61.70	60.00	43.35	67.15	82.50	54.15	66.05	
B I	Basic slag, 15 %	34.35	34.85	34.85	34.85	34.85	34.85	34.85	34.85	
	Superphosphate, 16 to 18 %	48.50	48.50	48.50	48.50	49.05	51.85	48.95	50.75	
	Kainite, 14 %	16.50	17.80	18.15	18.05	18.70	22.10	19.25	21.05	
	Nitrate of soda	n. q.	n. q.	n. q.	* 125.00	n. q.	n. q.	* 125.00	* 147.00	
	Sulphate of ammonia, 20 ½ %	119.40	115.40	123.40	121.70	120.10	124.85	122.70	* 126.40	
B II	Maize, imported	109.25	108.00	101.50	89.25	66.60	72.25	68.10	67.20	
	Wheat bran (Prague) 1)	98.75	90.00	90.00	97.85	65.60	57.40	69.80	60.70	
	Rye bran (Prague) 1)	96.75	88.00	88.00	96.50	64.90	57.40	69.20	60.80	
	Crushed soya (Prague) 1) 2)	142.00	n. q.	106.00	* 106.00	98.20	n. q.	* 94.40	* 104.50	
	Rapeseed cake (Prague) 1) 3)	117.50	n. q.	94.00	92.35	87.15	98.95	84.25	96.50	
	Linseed cake (Prague) 1) 4)	139.50	n. q.	114.00	* 114.00	91.15	106.75	* 92.00	111.80	
	Groundnut cake (Prague) 1) 5)	150.00	n. q.	106.00	102.35	91.95	108.25	* 109.85	114.35	

* indicates that the product, during part of the period under review, was not quoted. — † indicates that the series is published in the *Intern. Yearbook of Agricultural Statistics* and used in the table of average monthly prices in gold francs per quintal. — § indicates that the series is published in the *Intern. Yearbook of Agricultural Statistics*.

1) Until the end of July 1934: average wholesale market prices; from August till November: manufacturer's selling prices; December: wholesaler's selling prices. — 2) From August 1934, soyabean cake, delivery at Lovosice. — 3) From July 1934: delivery at Lovosice. — 4) From December 1932: delivery at Lovosice. — 5) From November 1932: delivery at Střekov. — 6) Revised Sept. price: * 12.70 — 7) Revised Sept. price: * 11.96.

AVERAGE MONTHLY PRICES IN GOLD FRANCS PER QUINTAL ¹⁾

DESCRIPTION	Dec.	Nov.	Oct.	Sept.	Aug.	July	Dec.	Dec.	Year	
	1934	1934	1934	1934	1934	1934	1933	1932	1934	1933
Wheat										
Winnipeg: No 1 Manitoba	9.12	9.20	8.96	9.41	9.79	9.33	7.33	6.97	8.52	8.34
Chicago: No 2 Hard Winter	12.13	11.98	11.80	12.46	12.18	11.19	10.18	8.90	11.10	11.05
Buenos-Aires: Barletta	6.61	6.48	6.60	7.44	8.17	6.78	6.15	7.70	6.59	7.57
Berlin: Home grown	24.98	24.70	24.46	24.21	23.31	23.04	22.72	23.32	23.65	23.09
Hamburg (c. i. f.):										
No 2 Manitoba	11.37	11.04	10.42	11.15	11.38	10.66	9.34	9.96	10.22	10.47
Basusso	7.72	7.61	7.76	8.67	9.18	7.61	7.21	8.89	7.51	8.83
Antwerp:										
Hard Winter	n. q.	n. q.	n. q.	n. q.	n. q.	* 7.47	n. q.	10.80	* 6.74	11.27
Barusso	7.48	7.38	7.50	8.20	8.79	7.57	7.80	9.45	7.41	8.75
Paris: Home grown	21.26	22.74	22.53	22.53	22.42	27.10	24.97	22.61	24.71	22.41
Liverpool and London: (c. i. f.):										
German (on sample)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	6.26	n. q.	* 6.27	* 6.98
Hungarian (on sample)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	6.50	n. q.	* 6.26	* 7.15
South Russian (on sample)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	6.85	n. q.	* 6.70	* 7.70
No 1 Manitoba (Pacific)	10.93	10.60	10.46	11.21	11.76	10.84	9.55	9.61	10.27	10.34
No 3 Manitoba (Pacific)	9.78	9.63	9.58	10.47	10.83	10.02	8.75	9.21	9.42	9.75
Rosafé	7.31	7.28	7.35	8.29	9.01	7.70	7.25	8.77	7.27	8.33
Australian	8.26	8.60	9.14	9.97	10.51	9.08	8.76	9.45	8.74	9.60
Milan: Home grown, soft	24.08	23.50	22.91	22.52	21.88	21.59	22.82	29.15	22.87	24.84
Genoa (c. i. f.):										
No 2 Manitoba	10.24	9.84	10.20	10.79	11.12	10.19	9.37	10.16	9.72	10.36
No 2 Canadian Durum	12.86	12.80	12.42	12.88	12.30	11.23	9.37	11.61	11.22	* 10.87
Rye										
Berlin: Home grown	20.02	19.76	19.52	19.27	18.53	18.91	18.52	19.02	19.32	18.54
Hamburg: La Plata	7.59	7.15	7.76	8.64	8.88	6.30	5.58	7.48	6.54	6.86
Varsaw: Home grown	8.49	8.28	8.88	10.02	9.96	8.28	8.42	8.84	8.68	10.09
Minneapolis: No 2	9.62	9.11	9.04	10.17	10.47	8.74	7.41	6.27	8.49	8.66
Barley										
Braila: Average quality	7.94	7.87	8.34	8.74	8.49	6.20	n. q.	5.80	* 7.01	* 4.59
Prague: Malting, average quality	16.91	16.65	16.40	16.13	15.94	* 16.32	12.78	12.17	14.48	* 12.86
Winnipeg: No 4 Western	7.36	7.09	7.72	7.99	7.90	6.28	4.93	5.00	6.42	5.59
Minneapolis: No 2 Feeding	11.62	10.72	10.31	11.24	9.90	7.36	6.57	5.56	8.30	6.72
Berlin: Home grown fodder	19.90	19.64	19.39	19.14	18.41	18.20	20.41	20.06	19.41	20.22
Antwerp: Danubian	9.77	10.00	10.27	10.66	10.56	9.12	7.07	8.05	8.70	7.17
Liverpool and London (c. i. f.):										
Russian	n. q.	n. q.	n. q.	n. q.	n. q.	* 7.46	6.13	* 7.60	* 6.42	* 6.58
No 3 Canadian Western	10.16	9.58	9.44	10.46	10.35	* 8.54	7.53	8.90	8.79	8.18
Oats										
Winnipeg: No 2 White	9.07	9.03	8.37	9.16	8.79	7.78	6.40	6.15	7.81	7.13
Chicago: No 2 White	12.11	11.84	11.41	12.06	10.98	9.70	8.01	5.98	9.65	8.04
Buenos-Aires: Current quality	5.21	5.18	5.45	5.79	6.04	4.72	3.98	5.17	4.53	5.14
Berlin: Home grown	20.14	19.88	19.64	19.39	18.65	20.57	17.77	14.76	19.96	16.40
Paris: Home grown	9.36	10.77	11.01	12.03	11.28	10.91	9.62	16.89	10.05	12.50
London and Liverpool (c. i. f.): Plata	6.66	6.49	6.70	7.17	7.59	6.20	6.53	7.07	5.84	6.87

1) As gold franc, the Swiss franc, which still represents the franc of the former Latin Monetary Union, has been adopted. In cases where the difference between the rates of exchange of the national currency considered and its parity with the Swiss franc did not during a given month reach $2\frac{1}{2}\%$, the monthly average has been reduced on the basis of parity; in the contrary cases the average rate of exchange for the month has been utilized. Finally, when considerable fluctuations in the exchanges in the course of a particular month render it necessary, each weekly quotation has first been reduced to gold francs and the average of these reductions calculated.

DESCRIPTION	Dec.	Nov.	Oct.	Sept.	Aug.	July	Dec.	Dec.	Year	
	1934	1934	1934	1934	1934	1934	1933	1932	1934	1933
Maize.										
Braila: Danubian	6.17	5.70	6.42	7.59	8.18	8.43	—	4.77	* 6.69	* 5.18
Chicago: No 2 Mixed American	n. 11.33	n. 10.58	9.47	9.57	9.24	7.61	6.12	4.90	7.92	6.42
Buenos-Aires: Yellow Plata	6.46	6.23	6.43	7.01	7.25	5.73	4.88	5.29	5.86	5.24
Liverpool and London (c. i. f.):										
Yellow Plata	7.41	7.23	7.16	7.84	8.41	6.78	6.50	6.83	6.88	6.58
No 2 White African	8.20	7.86	8.00	8.48	n. q.	n. q.	n. q.	7.00	* 7.90	* 7.15
Milan: Home grown	14.31	13.35	13.00	12.29	16.69	16.91	12.78	15.74	14.50	13.35
Rice.										
Milan: Originario	26.80	26.17	25.83	27.04	26.63	27.27	26.59	27.56	27.24	26.01
Rangoon: No 2 Burma	7.09	7.78	8.22	8.21	8.34	7.40	6.82	n. 8.23	6.91	7.37
Saigon: No 1 Round white	7.00	7.04	7.02	8.12	7.82	6.39	6.29	8.57	6.59	8.28
London (c. i. f.):										
No 2 Burma	9.92	10.52	11.95	11.94	11.95	10.66	10.10	n. 11.84	10.17	11.08
No 1 Saigon	10.02	10.58	10.22	11.29	10.81	9.17	9.64	n. 12.25	9.58	11.50
Tokio: Chumai	14.38	14.96	14.85	14.35	13.93	13.18	12.42	n. 13.56	13.30	12.47
Cotton.										
New Orleans: Middling	86.99	85.38	84.72	86.84	88.78	85.83	72.20	66.85	83.52	75.50
Bombay (terminal market): M. g. Broach, f. g.	74.79	69.98	66.75	69.59	73.24	69.48	64.13	71.45	69.02	69.93
Alexandria: Sakellaris, f. g. f.	110.75	108.31	98.26	101.12	103.23	107.46	99.31	98.50	108.44	104.70
Liverpool:										
Middling american	99.72	96.95	95.85	98.11	100.98	98.76	81.60	80.95	95.28	87.50
M. g. Broach, f. g.	79.80	74.65	70.82	73.23	75.35	73.47	n. 61.86	n. 74.71	71.87	n. 73.74
Sakellaris, f. g. f.	126.37	123.91	113.00	117.01	123.09	120.36	113.31	110.11	123.01	118.95
Beef.										
Berlin: Home grown (live weight)	98.18	92.87	90.15	87.44	85.59	80.12	82.00	77.04	83.54	78.55
Paris: Home grown (dead weight)	88.91	98.86	104.75	111.85	108.00	105.15	104.54	123.63	104.22	112.78
London: Home grown (dead weight)	96.29	94.37	95.46	102.37	104.45	105.18	107.51	111.83	101.53	111.23
Mutton.										
Paris: Home grown (dead weight)	199.55	211.12	216.40	217.01	219.04	214.98	216.19	218.22	225.99	218.93
London: Home grown (dead weight)	132.73	127.89	131.02	138.97	144.36	154.92	137.94	123.52	142.03	142.13
Pork.										
Denmark: Home grown (live weight)	106.41	108.33	107.44	117.18	110.15	106.74	96.69	75.47	107.97	93.20
Rotterdam: Home grown (live weight)	66.66	67.70	62.49	62.49	62.49	66.66	80.20	62.49	68.74	71.07
Berlin: Home grown (live weight)	120.00	125.23	125.72	122.76	112.12	100.69	116.83	93.99	107.88	98.52
Paris: Home grown (live weight)	66.99	75.92	82.42	88.91	87.09	78.36	113.07	147.78	85.77	131.04
London: Home grown (dead weight)	134.49	132.17	130.03	128.55	117.07	108.74	149.59	128.68	129.54	131.79

DESCRIPTION	Dec.	Nov.	Oct.	Sept.	Aug.	July	Dec.	Dec.	Year	
	1934	1934	1934	1934	1934	1934	1933	1934	1934	1933
Butter										
Copenhagen: Danish	146.31	143.44	126.91	121.57	121.66	95.69	138.99	156.76	111.34	131.90
Leeuwarden: Dutch	113.00	96.86	89.57	89.57	89.57	82.28	124.46	152.06	92.48	125.37
Hamburg: Schleswig-Holstein	322.30	322.33	323.57	323.57	313.18	300.76	320.53	272.22	314.83	277.77
London:										
Danish	185.01	182.07	164.98	158.20	160.33	134.75	181.51	202.69	150.88	174.82
Argentine	106.31	n. q.	n. q.	n. q.	n. q.	n. q.	119.90	142.39	* 106.12	131.63
Australian, salted	106.12	110.38	99.29	105.84	113.17	105.18	113.24	139.54	107.41	134.63
New Zealand, salted	107.81	111.89	99.29	107.58	120.34	113.81	113.65	139.89	111.11	136.44
Cheese										
Milan: Parmigiano-Reggiano	161.58	163.32	163.49	144.87	194.47	194.80	232.87	262.88	190.75	264.15
Alkmaar: Edam 40 x	78.11	83.32	85.90	85.40	93.73	93.32	93.73	105.40	87.40	93.34
Kempten: Emmenthal variety	180.98	180.31	178.46	175.37	169.74	167.81	175.37	184.01	174.39	178.52
London:										
English Cheddar	129.23	128.52	125.96	122.09	113.80	101.25	153.20	169.27	* 127.81	145.90
Canadian	83.21	82.40	75.95	75.69	90.54	88.31	81.60	107.79	82.69	101.00
New ENEealandE	67.15	77.62	72.98	71.22	74.32	73.46	79.38	92.57	71.08	78.93
Eggs (per 100)										
Denmark: Danish for export 1)	100.14	131.99	100.72	85.10	72.95	51.47	113.31	126.22	71.69	81.30
Roermond: Dutch for export	8.85	11.35	9.31	8.35	7.60	6.87	11.33	10.85	8.21	7.69
Warsaw: Polish, average quality	5.65	5.25	4.69	3.58	3.49	3.03	6.45	8.10	4.30	4.98
Berlin: German, big, special quality	14.88	14.82	13.66	12.50	11.56	10.93	16.51	14.57	12.67	12.83
London:										
Danish	10.79	12.67	9.57	7.91	8.12	6.29	12.63	n. 13.18	8.08	9.10
Dutch	10.34	12.56	10.00	8.33	8.81	7.20	n. q.	n. q.	8.67	* 10.06

1) Per quintal.

EXCHANGE RATES

OF DIFFERENT CURRENCIES IN RESPECT TO THEIR PARITY WITH THE SWISS FRANC (1)

NATIONAL CURRENCIES	Exchange rates					Percentage bonus (+) or loss (—)				
	18 Jan. 1935	11 Jan. 1935	4 Jan. 1935	28 Dec. 1934	11 Dec. 1934	18 Jan. 1935	11 Jan. 1935	4 Jan. 1935	28 Dec. 1934	11 Dec. 1934
Germany: reichsmark	123.875	123.850	123.700	123.950	123.950	+ 0.3	+ 0.3	+ 0.2	+ 0.4	+ 0.4
Argentina: paper peso *)	94.625	101.211	100.910	101.981	102.015	— 57.0	— 54.0	— 54.1	— 53.6	— 53.6
Belgium: belge	72.200	72.275	72.050	72.375	72.200	+ 0.2	+ 0.3	0.0	+ 0.4	+ 0.2
Canada: dollar	3.110	3.090	3.081	3.110	3.112	— 40.0	— 40.4	— 40.6	— 40.0	— 40.0
Denmark: crown	67.550	67.550	67.125	68.100	68.100	— 51.4	— 51.4	— 51.7	— 51.0	— 51.0
Spain: peseta	42.200	42.200	42.125	42.200	42.175	— 57.8	— 57.8	— 57.9	— 57.8	— 57.8
Egypt: pound 2)	15.140	15.125	15.080	15.240	15.245	— 40.0	— 40.0	— 40.2	— 39.6	— 39.6
United Kingdom: pound sterling	3.099	3.074	3.064	3.084	3.084	+ 1.2	+ 0.4	+ 0.1	+ 0.8	+ 0.8
United States: dollar	20.380	20.375	20.356	20.379	20.370	+ 0.4	+ 0.3	+ 0.3	+ 0.4	+ 0.3
France: franc	59.000	59.500	58.375	58.750	59.000	— 34.9	— 34.4	— 35.6	— 35.2	— 34.9
Indo-China: piaster 3)	114.307	114.194	113.477	114.681	114.719	— 39.6	— 39.6	— 40.0	— 39.4	— 39.4
Hungary: pengő 4)	26.385	26.405	26.375	26.415	26.405	— 3.3	— 3.2	— 3.3	— 3.2	— 3.2
India: rupee *)	88.508	88.421	88.155	89.281	89.310	— 65.7	— 65.8	— 65.9	— 65.4	— 65.4
Japan: yen *)	208.825	208.700	208.600	208.775	208.750	+ 0.2	+ 0.2	+ 0.1	+ 0.2	+ 0.2
Netherlands: florin	58.300	58.227	58.250	58.312	58.287	+ 0.3	+ 0.1	+ 0.2	+ 0.3	+ 0.3
Poland: zloty	n. 3.080	n. 3.080	n. 3.080	n. 3.080	n. 3.080	— 0.6	— 0.6	— 0.6	— 0.6	— 0.6
Rumania: leu	78.050	78.000	77.700	78.600	78.600	— 43.8	— 43.8	— 44.1	— 43.4	— 43.4
Sweden: crown	12.900	12.895	12.865	12.905	12.925	+ 0.8	+ 0.8	+ 0.5	+ 0.9	+ 1.0
Czechoslovakia: crown										

1) The exchange rate represents the value of 100 units of the national currency (for the dollar and the pound sterling 1 unit) expressed in Swiss francs, as far as possible on the Zurich Exchange. With regard to the currencies marked with an asterisk (*) a conversion has been made, the original exchange rates on London being converted into Swiss francs by means of the rate of the £ in Zurich. — 2) As the relation between the Egyptian pound and the pound sterling remains unchanged, the exchange rate of the latter only is given. — 3) As the relation between the Indo-Chinese piaster and the French franc changes only slightly, the exchange rate of the latter only is given. — 4) Bank notes.

Egg prices in Roermond.

Prices of white Dutch eggs, 57/58 grs. each, in Roermond, have not been published in the *Crop Report* for some time. In the following table are given the missing quotations expressed in florins per 100.

Date		Eggs for export in Germany	Eggs for other destinations	Date		Eggs for export in Germany	Eggs for other destinations
17 August	1934....	3.60	3.30	19 October	1934....	5.50	4.50
24 "	"	3.70	3.10	26 "	"	5.80	4.50
31. "	"	3.60	3.00	2 November	"	5.80	4.60
7 September	"	3.90	3.15	9 "	"	5.80	4.80
14 "	"	3.90	3.30	16 "	"	5.60	4.70
21 "	"	4.10	3.10	23 "	"	5.60	5.20
28 "	"	4.10	3.60	30 "	"	5.10	5.20
5 October	"	4.60	4.00	7 December	"	5.10	5.00
12 "	"	5.40	4.00	14 "	"	5.10	4.50

VARIATIONS IN THE INDEX-NUMBERS OF PRICES

On the following pages the index-numbers of prices of agricultural products and other price-indices of interest to the farmer are given as published in the different countries. Owing to the substantial divergence, which often exists in the value and significance of the data available, it has been considered opportune to reproduce all the data in their original form only, without attempting formally to unite them.

In addition to the original data summary tables are given below.

Percentage variations in the index-numbers for December 1934

COUNTRIES	compared with those for November 1934		compared with those for December 1933	
	Index-numbers of prices of agricultural products	Index-numbers of wholesale prices in general	Index-numbers of prices of agricultural products	Index-numbers of wholesale prices in general
Germany	— 0.6	— 0.2	+ 7.3	+ 5.0
England and Wales	+ 0.0	+ 2.2	+ 10.0	+ 3.5
Argentina	+ 2.4	—	+ 14.0	—
Canada	+ 0.7	0.0	+ 15.6	+ 3.2
United States: Bur. of Agric. Economics	— 1.0	—	+ 29.5	—
United States: Bur. of Labor	+ 1.7	+ 0.5	+ 38.7	+ 8.6
Finland	+ 4.1	0.0	+ 4.1	+ 1.1
Hungary	+ 1.4	+ 1.2	+ 30.9	+ 18.3
Italy	+ 0.4	+ 0.7	+ 9.4	+ 1.0
New Zealand	+ 5.2	—	— 3.7	—
Netherlands	0.0	0.0	— 7.3	0.0
Poland	— 1.4	— 0.2	— 10.6	— 7.1
Yugoslavia:				
plant products	— 2.0	— 0.6	+ 9.9	
livestock products	+ 0.4		— 2.3	0.0

INDEX-NUMBERS OF PRICES OF AGRICULTURAL PRODUCTS AND OF COMMODITIES BOUGHT BY THE FARMER 1)

DESCRIPTION	Dec.	Nov.	Oct.	Sept.	Aug.	July	Dec.	Dec.	Year	
	1934	1934	1934	1934	1934	1934	1933	1932	1934	1933
Germany										
(Statistisches Reichsamt)										
1913 = 100.										
Foodstuffs of plant origin	112.9	112.7	112.2	112.9	115.7	115.0	100.9	96.6	108.7	98.7
Livestock	76.8	78.5	79.3	76.9	73.4	67.8	70.8	60.6	70.9	64.3
Livestock products	109.5	110.5	109.1	106.0	104.0	101.9	110.9	96.9	105.0	97.5
Feeding stuffs	105.0	104.7	105.1	105.8	108.7	110.6	94.2	83.2	102.0	86.4
Total agricultural products	100.5	101.1	100.9	99.8	99.6	97.5	93.7	84.4	95.9	86.8
Fertilizers 1)	66.0	65.0	68.4	68.4	67.9	66.8	68.0	70.2	68.6	70.2
Agricultural dead stock	111.0	111.0	111.2	111.3	111.4	111.5	111.1	113.1	111.1	111.6
Finished manufactures ("Konsumgüter")	122.5	122.1	120.8	118.4	116.7	115.8	113.9	112.0	117.3	111.7
Wholesale products in general	101.0	101.2	101.0	100.4	100.1	98.9	96.2	92.4	98.4	93.3
England and Wales										
(Ministry of Agriculture and Fisheries)										
Average of corresponding months										
1911-13 = 100.										
Agricultural products 2)	121	121	122	126	123	117	110	107	119	111
Feeding stuffs	98	96	98	102	101	88	83	90	91	85
Fertilizers	89	89	88	89	89	91	89	89	90	90
Wholesale products in general 3)	97.4	95.3	95.4	96.6	98.1	96.9	94.1	91.4	96.3	93.7
Argentina										
(Banco de la Nación Argentina)										
1926 = 100.										
Cereals and linseed	71.1	69.2	71.8	78.7	83.9	69.6	57.7	52.2	68.1	54.4
Meat	83.5	83.4	81.2	80.0	80.0	78.7	71.8	56.8	78.5	65.9
Hides and skins	73.0	69.6	67.5	65.3	59.6	60.0	75.6	51.4	71.6	63.9
Wool	68.3	72.9	80.4	80.5	82.2	82.1	88.9	36.8	84.3	54.6
Dairy products	66.4	65.5	68.4	68.1	68.2	65.0	63.8	53.3	62.3	57.4
Forest products	87.9	70.1	70.2	71.6	71.6	71.6	72.8	68.5	73.1	72.5
Total agricultural products	72.5	70.8	72.9	77.0	80.0	70.4	63.6	51.9	70.5	56.9
Canada										
(Internal Trade Branch)										
of the Dominion Bureau of Statistics										
1926 = 100.										
Field products (grain, etc.)	56.0	55.7	55.3	58.9	60.7	57.8	45.3	33.4	53.9	45.7
Livestock and livestock products	70.9	70.4	70.4	65.3	63.1	63.7	66.6	58.1	67.6	59.9
Total Canadian farm products	61.6	61.2	60.9	61.3	61.6	60.0	53.3	42.6	59.0	51.0
Fertilizers	75.8	75.8	75.8	74.6	74.6	74.6	76.2	72.3	76.2	74.3
Consumers' goods (other than foodstuffs, etc)	76.7	76.7	76.9	77.3	77.2	77.0	77.4	77.0	77.2	76.2
Wholesale products in general	71.2	71.2	71.4	72.0	72.3	72.0	69.0	64.0	71.6	67.2

1) For an explanation of the method of calculation of the index-numbers, reference should be made to the Institute's publication *Index-numbers of Prices of Agricultural Products and other Price-indices of interest to the Farmer* (Rome, 1930) as well as to the *Crop Report* (January 1932, pages 77 to 79; July 1932, page 517; March 1934, page 231; December 1934, page 696).

2) Revised index-numbers due to the Wheat-Act payments and, from September 1934, the Cattle Emergency Act-payments.

— 3) Calculated by the *Statist*, reduced to base-year 1913 = 100.

DESCRIPTION	Dec.	Nov.	Oct.	Sept.	Aug.	July	Dec.	Dec.	Year	
	1934	1934	1934	1934	1934	1934	1933	1932	1934	1933
United States										
(Bureau of Agricultural Economics)										
Average 1909-10 to 1913-14 = 100.										
Cereals	116	109	109	112	106	91	73	34	93	62
Cotton and cottonseed	109	107	107	110	107	99	77	43	99	64
Fruits	85	94	98	93	101	113	74	73	100	74
Truck crops (market garden crops)	121	107	110	110	108	102	114	89	102	105
Meat animals	73	72	74	82	68	66	52	52	68	60
Dairy products	107	105	100	99	97	94	88	84	96	82
Chickens and eggs	119	125	108	104	86	76	94	117	89	75
Miscellaneous	113	123	137	126	125	94	104	70	108	83
Total agricultural products	101	101	102	102	96	87	78	63	90	70
Commodities purchased 1)	126	126	126	126	125	122	116	103	...	109
Agricultural wages 1)	86	—	93	—	—	90	2) 81	2) 74	..	80
United States										
(Bureau of Labor)										
1926 = 100.										
Cereals	91.5	87.2	85.0	88.1	86.0	74.8	60.4	31.7	74.5	53.1
Livestock and poultry	57.2	54.0	55.3	64.1	56.2	48.8	38.0	38.7	51.5	43.4
Other farm products	75.1	75.8	75.4	74.4	73.1	70.5	64.3	51.3	70.5	55.8
Total agricultural products	72.0	70.8	70.6	73.4	69.8	64.5	55.5	44.1	65.3	51.4
Agricultural implements	92.7	91.9	92.0	92.0	92.0	92.0	85.1	84.5	89.6	83.5
Fertilizer materials	65.3	64.6	65.7	66.4	64.8	67.6	68.1	63.1	67.1	65.9
Mixed fertilizers	75.4	73.5	73.0	73.0	73.0	72.8	69.9	65.6	72.5	64.5
Cattle feed	123.1	108.2	97.6	100.7	104.0	88.8	60.3	37.1	89.4	57.9
Non-agricultural commodities	77.8	77.7	77.6	78.4	77.8	76.9	74.0	66.5	76.9	69.0
Wholesale products in general	76.9	76.5	76.5	77.6	76.4	74.8	70.8	62.6	74.9	65.9
Finland										
(Central Bureau of Statistics)										
1926 = 100.										
Cereals	79	...	81	86	86	50	80	89	82	88
Potatoes	56	...	51	51	42	42	44	71	49	77
Fodder	64	...	63	61	63	70	81	66	72	72
Meat	73	...	70	74	74	77	62	57	71	64
Dairy products	86	...	80	76	75	70	77	77	75	75
Total agricultural products	76	73	74	74	73	72	73	72	73	74
Wholesale products in general	90	90	90	90	90	89	89	90	90	89
Hungary										
(Central Bureau Statistics)										
1913 = 100.										
Agricultural and livestock products	72	71	70	71	69	66	55	68	—	—
Wholesale products in general	84	83	82	83	81	79	71	81	—	—
Italy										
(Consiglio Provinciale dell'Economia Corporativa di Milano)										
1913 = 100.										
National agricultural products	316.2	314.9	313.4	308.8	305.3	292.3	289.1	323.0	297.9	280.7
Wholesale products in general	279.2	277.2	276.4	275.5	274.8	272.9	276.5	298.9	275.8	283.4
New Zealand										
(Census and Statistics Office)										
Average 1909-13 = 100.										
Dairy products	78.3	76.3	75.1	84.0	82.4	84.2	80.5	83.9	77.5	84.0
Meat	163.6	147.6	151.8	153.4	151.6	161.0	147.2	108.7	152.2	120.7
Wool	75.0	73.4	104.1	104.1	104.1	103.2	100.8	52.7	110.0	69.8
Other pastoral products	77.9	81.7	77.1	80.4	85.1	88.3	88.2	61.7	80.2	74.5
All pastoral and dairy products	98.9	93.9	101.7	106.2	105.4	108.5	102.7	79.9	104.5	88.4
Field products	121.5	121.4	120.4	123.1	122.0	123.5	116.6	96.8	120.6	115.8
Total agricultural products	99.3	94.4	102.0	106.4	105.6	108.8	103.1	80.4	104.7	89.2

1) 1910-1914 = 100. — 2) January.

DESCRIPTION	Dec. 1934	Nov. 1934	Oct. 1934	Sept. 1934	Aug. 1934	July 1934	Dec. 1933	Dec. 1932	Year	
									1933-34	1932-33
Norway										
(Kegl. Selskap for Norges Vel)										
Average 1909-14 = 100.										
Cereals	137	136	139	141	134	101	115	116	112	120
Potatoes.	115	111	117	97	125	282	90	75	105	101
Pork.	88	89	87	86	80	76	89	98	81	91
Other meat.	136	129	137	149	149	140	105	106	110	109
Eggs.	109	129	129	101	84	74	110	111	85	93
Dairy products.	133	132	132	132	132	130	131	128	126	124
Concentrated feeding stuffs	121	120	117	112	103	98	91	103	96	104
Maize.	110	110	114	111	100	90	80	87	83	90
Fertilizers.	74	72	72	80	88	88	84	89	87	89
Netherlands										
(Bureau of Agriculture)										
Average 1924-25 to 1928-29 = 100.										
Plant products.	55	58	62	68	68	56	60	41	59	42
Livestock products.	49	48	48	50	51	53	53	50	53	51
Total agricultural products.	51	51	52	55	55	53	55	48	55	49
Agricultural wages	71	71	71	71	71	71	74	83	74	81
Wholesale products in general 1).	52.1	52.1	52.1	52.1	52.8	52.1	52.1	51.4 2)	52.8 2)	50.1
Poland										
(Central Bureau of Statistics)										
1928 = 100.										
Raw plant products	33.2	32.3	35.6	37.2	39.1	38.6	34.4	36.1	35.6	41.1
Meat animals.	32.5	33.9	34.8	35.1	37.3	36.9	41.9	38.0	36.7	42.5
Dairy products and eggs	43.3	47.1	39.8	36.5	36.7	38.1	48.8	52.6	41.2	46.7
Products directly sold by farmers	34.8	35.6	36.1	36.4	38.1	37.9	39.6	39.8	37.0	42.6
Flour and groats.	38.8	38.4	40.2	41.1	41.5	40.7	38.4	42.3	38.8	47.8
Meat and lardfat.	36.9	38.2	40.2	44.4	43.1	42.1	49.4	45.8	43.5	49.8
Sugar, alcohol, beer	85.6	85.6	85.5	85.5	90.0	90.1	90.2	90.4	88.6	90.3
Products of agricultural industries	53.4	53.8	55.0	56.8	57.9	57.4	59.2	59.3	56.7	62.4
Total agricultural products.	44.0	44.6	45.5	46.5	47.9	47.5	49.2	49.4	46.8	52.4
Commodities purchased.	68.6	68.5	69.0	69.1	69.8	70.6	71.8	76.7	70.7	72.9
Wholesale products in general.	53.5	53.6	54.5	55.0	55.8	55.9	57.6	59.7	55.7	59.1
Yugoslavia										
(National Bank of the Kingdom of Yugoslavia)										
1926 = 100.										
Plant products.	57.9	59.1	58.8	61.2	56.5	60.0	52.7	61.6	57.4	57.2
Livestock products.	55.8	55.6	58.4	54.6	51.9	52.0	57.1	57.3	55.4	57.1
Industrial products	64.9	65.3	66.0	65.6	65.3	66.3	68.4	68.1	67.4	70.8
Wholesale products in general.	62.3	62.7	63.6	63.2	61.1	62.8	62.3	64.8	63.2	64.4

1) Calculated by the the Central Statistical Bureau of the Netherlands, reduced to the base 1925-1929 = 100 — 2) Calendar year.

RECIPROCAL PARITIES OF THE VARIOUS CURRENCIES IN WHICH ARE QUOTED THE PRICES IN THE MONTHLY AND THE QUARTERLY PRICE REVIEWS (1)

COUNTRIES	Unit of Currency	Germany	Argentina	Belgium	Canada (2)	Denmark	Sweden	Egypt	Spain Switzerland	United States (3)	France (4)	Great Britain	Hungary	India	Italy	Japan	Netherlands	Poland	Rumania	Czechoslo- vakia
Germany	Reichsmark	1.000	0.561	8.566	0.238	0.889	4.819	1.235	0.403	6.080	0.979	1.352	0.653	4.526	0.478	0.593	2.123	39.825	9.648	
Argentina	Paper peso	1.782	1.000	15.263	0.424	1.584	8.586	2.200	0.718	10.833	1.744	2.427	1.163	8.064	0.851	1.056	3.872	70.959	17.191	
Belgium	Franc	0.117	0.065	1.000	0.028	0.104	0.563	0.145	0.047	0.710	0.114	0.159	0.076	0.528	0.056	0.069	0.248	4.649	1.127	
Canada	Dollar (2)	4.198	2.356	35.959	1.000	3.731	20.232	5.183	1.693	25.524	4.110	5.718	2.740	19.000	2.006	2.488	8.914	167.181	40.501	
Denmark/Sweden	Crown	1.125	0.631	9.637	0.268	1.000	5.422	1.389	0.454	6.840	1.101	1.532	0.734	5.092	0.538	0.667	2.389	44.803	10.854	
Egypt	Piastre	0.207	0.116	1.777	0.049	0.184	1.000	0.256	0.083	1.262	0.203	0.283	0.135	0.939	0.099	0.123	0.441	8.264	2.002	
Spain/Switzerland	Peseta/Fr.	0.810	0.455	6.938	0.193	0.720	3.903	1.000	0.327	4.925	0.793	1.103	0.529	3.666	0.387	0.480	1.720	32.258	7.815	
United States	Dollar (3)	2.479	1.391	21.237	0.591	2.204	11.948	3.061	1.000	15.074	2.427	3.377	1.618	11.221	1.185	1.469	5.265	98.737	23.920	
France/Indo-China (4)	Franc	0.164	0.092	1.409	0.039	0.146	0.793	0.203	0.066	1.000	0.161	0.224	0.107	0.744	0.079	0.097	0.349	6.550	1.567	
Great Britain	Shilling	1.021	0.573	8.750	0.243	0.908	4.923	1.261	0.411	6.211	1.000	1.391	0.667	4.623	0.488	0.605	2.169	40.680	9.856	
Hungary	Pengo	0.734	0.412	6.289	0.175	0.653	3.580	0.905	0.296	4.464	0.720	1.000	0.479	3.323	0.351	0.435	1.559	29.240	7.084	
India	Rupce	1.532	0.860	13.125	0.365	1.362	7.384	1.892	0.618	9.316	1.500	2.087	1.000	6.935	0.732	0.908	3.254	61.020	14.783	
Italy	Lira	0.221	0.124	1.892	0.053	0.196	1.065	0.273	0.090	1.343	0.216	0.301	0.144	1.000	0.106	0.131	0.469	8.799	2.131	
Japan	Yen	2.092	1.174	17.924	0.498	1.860	10.084	2.583	0.843	12.723	2.049	2.850	1.366	9.471	1.000	1.240	4.443	83.333	20.189	
Netherlands	Florin	1.687	0.947	14.454	0.402	1.450	8.132	2.083	0.681	10.260	1.652	2.298	1.101	7.637	0.806	1.000	3.583	67.200	16.280	
Poland	Zloty	0.471	0.264	4.034	0.112	0.419	2.269	0.581	0.190	2.863	0.461	0.641	0.307	2.131	0.225	0.279	1.000	18.755	4.543	
Rumania	Leu	0.025	0.014	0.215	0.006	0.022	0.121	0.031	0.010	0.153	0.025	0.034	0.016	0.114	0.012	0.015	0.053	1.000	0.242	
Czechoslovakia	Crown (5)	0.103	0.058	0.887	0.025	0.092	0.499	0.128	0.042	0.630	0.102	0.141	0.067	0.469	0.049	0.062	0.220	4.127	1.000	

(1) Each figure gives the equivalent in the currency of the country indicated at the head of the respective column of the currency unit indicated at the beginning of the respective line. — (2) Till 31 January 1934 also parity of the United States. — (3) New parity as from 31 January 1934. — (4) 1 Gold piastre equals 10 francs. — (5) From 17 February 1934 the crown represents only $\frac{1}{10}$ of its previous gold value.

MONTHLY CROP REPORT AND AGRICULTURAL STATISTICS

The following explanations refer to crop conditions quoted in the crop notes and in the tables. — Crop condition according to the system of the country: Germany, Austria, Hungary, Luxemburg and Czechoslovakia: 1 = excellent, 2 = good, 3 = average, 4 = bad, 5 = very bad; France: 100 = excellent, 70 = good, 60 = fairly good, 50 = average, 30 = bad; Lithuania, Poland, Sweden and Switzerland: 5 = excellent, 4 = good, 3 = average, 2 = bad, 1 = very bad; Netherlands: 90 = excellent, 70 = good, 60 = fairly good, 50 = below average; U. S. S. R.: 5 = good, 4 = above the average, 3 = average, 2 = below average, 1 = bad; Canada: 100 = crop condition promising a yield equivalent to the average yield of a long series of years; United States: 100 = crop condition which promises a normal yield; Egypt: 100 = from June 1934, crop condition which promises a yield equal to the average yield of the last five years. — For other countries the system of the Institute is employed: 100 = crop condition which promises a yield equal to the average of the last ten year.

CEREALS

Wheat Production in 1934. — During the course of last month several countries issued revised figures of their wheat harvests. These for the most part are only slight modifications of the former estimates. Of the European countries, Estonia, Lithuania and Romania have communicated new estimates which practically confirm the preceding figures. The total wheat production of Europe remains at the figure of 1,510 million bushels arrived at in December last. There

World Wheat Production (1)

(Million bushels).

Years	Europe			North America	South America	Asia 1)	Africa	Oceania	Total	U.S.S.R.
	Importing countries	Exporting countries	Total							
Average 1923-27 . . .	920	323	1,243	1,210	275	402	108	143	3,381	676
1928	977	433	1,409	1,491	399	342	116	168	3,925	807
1929	1,071	378	1,449	1,139	221	384	136	134	3,463	694
1930	915	445	1,360	1,322	273	459	115	221	3,750	989
1931	974	462	1,435	1,270	264	407	131	197	3,704	753
1932	1,212	280	1,492	1,197	286	393	140	224	3,732	744
1933	1,292	455	1,747	823	34	420	121	185	3,643	1,019
1934 (pre liminary) . .	1,188	322	1,510	782	305	426	150	142	3,315	...

1) Not including China, Persia, Turkey and Iraq.

is a possibility that this total may show some change as, in the case of certain countries, including Denmark, Greece, Italy, Poland, Portugal, Spain and Switzerland, only the first estimates of the harvest are as yet known while the figure for France is only a rough estimate. Last year the February estimate showed an underestimation of 40 million bushels compared with the final results. This year, however, the changes which may occur are likely to be much smaller.

An increase of 5 to 10 million bushels at the most in the present total appears to be the most reliable forecast.

Turning to African countries, French Morocco has increased its earlier estimate by a considerable amount, raising it from 31 to 39 million bushels while the Union of South Africa has once more increased its estimate. The crops in these two countries are both records and, in consequence, the total for the continent reaches a record also.

In South America, the harvest results, on the other hand, are not as satisfactory as they were expected to be in several countries. In Argentina, the threshing results have shown considerable losses resulting from the November frosts and rainy weather during the harvest. Grain is mediocre in quality and poor in weight. The Chilean crop, though official estimates have not yet been issued, appears to be rather smaller than that of last year. The total of the South American wheat crop is accordingly 5 million bushels smaller than the previous estimate. Australia has revised its October estimate, reducing it by 2 million bushels. New Zealand has issued the first estimate of the crop which, owing to the reduced acreage under wheat and to the unfavourable conditions of the season, is very low. An increase in the wheat requirements of New Zealand is not, however, to be expected, the stocks at present existing in the country being twice the normal quantity.

When account is taken of all the new data received since the publication of the January issue of the Crop Report total world production shows only a very slight increase, the increases recorded by some countries being largely counterbalanced by decreases in others.

International Trade in Wheat in 1934-35. — The most recent official statistics of net world exports relate to the first five months of the present year, that is, from 1 August to 31 December 1934. These are set out in the following table.

World net exports of wheat (including flour in terms of wheat)

(Million bushels)

Months	1934-35	1933-34	1932-33	1931-32	1930-31	1929-30
August	51	45	41	66	77	71
September	41	51	48	78	74	57
October	50	46	62	74	84	60
November	42	41	54	67	77	51
December	38	51	60	64	59	50
January	—	48	62	62	54	48
February	—	44	64	73	70	45
March	—	50	64	74	67	50
April	—	35	40	70	62	42
May	—	44	52	67	81	50
June	—	45	42	59	67	51
July	—	46	44	45	52	53
<i>Total Season . . . 1)</i>	<i>610</i>	<i>546</i>	<i>633</i>	<i>799</i>	<i>824</i>	<i>628</i>
Total August-December . . .	222	234	265	349	371	289
Percentage of total season. . .	36 %	43 %	42 %	43 %	45 %	46 %

1) Forecast October 1934.

The export movement in December was one of the lowest registered in recent years and was even very much below the low one of December 1933. The explanation is that shipments to non-European destinations which, during the preceding months, were substantial in amount, slackened in December, the demand from the East, having fallen suddenly particularly that from China, on the announcement of a probable increase in the Customs duty on wheat, an increase which, however, did not take place.

Total exports, which, during the first four months of the year, were maintained at a level very slightly above that of last year, have now fallen very appreciably below it. The estimate of world exports published in the October Crop Report forecast average exports of about 51 million bushels per month. The figures for the first five months, however, show that during this period, exports barely reached 45 million bushels per month and it hardly appears probable that the greater activity which we expect during the second part of the year will be sufficient to make up the difference which was recorded during the first period.

European imports showed an appreciable recovery in December and, for the first time in the present year, they are higher than they were in the corresponding month of last year. This increase is recorded both in the imports of Great Britain and Ireland and in those of the Continent.

Net imports of wheat into Europe (including flour in terms of wheat).

(Million bushels)

Months	Season 1934-35			Season 1933-34		
	United Kingdom and Irish Free State	Other European countries	Total Europe	United Kingdom and Irish Free State	Other European Countries	Total Europe
August	18	14	32	19	15	34
September	20	16	36	22	13	35
October	18	13	31	23	14	37
November	17	12	29	22	13	35
December	20	12	32	18	10	28
January	—	—	—	14	10	24
February	—	—	—	16	11	27
March	—	—	—	22	15	37
April	—	—	—	21	13	34
May	—	—	—	20	14	34
June	—	—	—	19	14	33
July	—	—	—	21	14	35
Total August-December . . .	93	67	160	104	65	169
Total season . . . 1)	230	200	430	237	156	393

1) Forecast October 1934.

For the first five months of the current season they remain, however, 9 million bushels below those of the same period of last year.

The forecast made here of requirements in the European importing countries in the current season was for an average import of 36 million bushels a month but the figures for the first five months show that the import was only 32 millions a month, a difference of 4 million bushels a month.

Winter wheat areas sown in 1934-35. — The first estimates of areas sown to winter wheat are available for countries cultivating in all about three-quarters of the total under this crop. In Europe, of ten countries that have communicated to the Institute an estimate of their winter sowings, only three report a very slight decrease, all the others indicating increases, even of some magnitude. In all these ten countries, which cultivate nearly three-quarters of the total European winter wheat area, have sown 45.6 million acres, that is, 1.5 million acres or 3.4 % more than last year. As for other European countries that have not yet estimated their sowings, it appears that the majority will show slight increases.

Area sown to winter cereals, in thousand acres.

(The years indicated are those of the harvest)

COUNTRIES	WHEAT			RYE			BARLEY			OATS		
	1935	% 1935		1935	% 1935		1935	% 1935		1935	% 1935	
		1934 = 100	1929 to 1933 = 100		1934 = 100	1929 to 1933 = 100		1934 = 100	1929 to 1933 = 100		1934 = 100	1929 to 1933 = 100
Germany . . .	4,609	98.7	103.9	10,670	97.6	96.3	845	111.6	152.6	—	—	—
Bulgaria . . .	3,010	99.5	101.6	455	101.0	84.9	429	97.9	92.6	—	—	—
Finland . . .	51	112.6	165.3	608	105.7	114.2	—	—	—	—	—	—
France 1) . . .	13,007	101.9	104.3	1,607	96.8	86.3	449	91.0	103.5	2,138	105.7	99.1
Greece . . .	2,020	101.7	137.6	—	—	—	—	—	—	—	—	—
Italy . . .	12,166	101.1	100.7	—	—	—	—	—	—	—	—	—
Latvia . . .	207	99.0	142.3	647	99.0	106.5	—	—	—	—	—	—
Lithuania . . .	425	105.5	115.1	1,260	103.6	105.2	—	—	—	—	—	—
Romania . . .	7,858	115.1	113.9	951	107.4	109.1	227	114.0	98.3	—	—	—
Czechoslovakia .	2,212	105.4	111.0	2,428	100.6	96.0	12	104.4	71.4	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—
U. S. S. R. . .	31,836	106.5	127.4	58,519	96.0	90.5	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—
Canada . . .	663	95.0	90.8	631	92.8	87.9	—	—	—	—	—	—
United States .	44,306	105.9	101.1	5,697	113.3	112.9	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—
India 2) . . .	33,158	96.7	107.0	—	—	—	—	—	—	—	—	—
Punjab 3) . . .	9,986	92.7	93.4	—	—	—	—	—	—	—	—	—
Syria & Lebanon	1,219	103.8	104.2	—	—	—	649	106.2	80.1	30	93.4	104.4
Egypt	1,448	100.4	90.8	—	—	—	272	95.6	79.5	—	—	—

1) Sowings at 1 January 1935. — 2) First estimate. — 3) Second estimate.

For England and Wales this increase is estimated at about 4%. It may therefore now be expected that the area cultivated this year in Europe to wheat will exceed 79 million acres and thus attain a new maximum, the previous one of 1933 having been 77.8 million acres; this extension is partly due to the particularly favourable autumn weather for sowing but above all to the stimulus of the economic situation.

A relatively considerable increase is also reported in sowings in the U. S. S. R., which appear to have increased to about 2 million acres but there is here an almost equivalent decrease in rye sowings.

The rise of two-and-a-half million acres in winter wheat area in the United States has been known for a considerable time.

In India the large reduction in the Punjab has been partly compensated for by increase in other regions of production and the result has been a decrease of only 1.1 million acres or 2.3 % in all. In North Africa wheat sowings were not favoured everywhere by the weather; on the other hand the difficulties presented by the movement of the excellent crop of 1934 are such as to check the extension of wheat cultivation; thus it is to be expected that the area cultivated will be somewhat smaller than that of last year.

In arriving at the total of estimates of area sown to winter wheat in the fifteen countries that have communicated them to the Institute, which cultivate nearly three-quarters of the winter wheat of the northern hemisphere, a total of 156.7 million acres, about 5 million above the corresponding figure of last year, is reached.

Crop Conditions at the middle of February. — In Europe an extremely cold spell in the second decade of January was followed by a milder period which was later interspersed by brief periods of intense cold. Much snow fell and, at the beginning of February, most of the fields, including even those in Mediterranean countries, were protected by a thick snow-cover. The first half of February was marked by variable weather, often mild and wet, which resulted in the thawing and, in some places, the complete disappearance of the snow-cover. Nights were generally very cold and in some countries there were alternations of freezing and thawing. The season hitherto has not been unfavourable in most countries, but in some areas considerable damage was caused by frost and excessive rain, damage on the whole, however, being slight in extent. Crop condition in nearly all European countries is in general satisfactory. It appears however, that the development of the crops is in many areas too forward for the time of year.

In the Soviet Union in February the snow-cover decreased in thickness and extent; it was feared that in the south winter cereals had not been adequately protected from the frosts.

Information from the United States, where crop condition in the central belt (Oklahoma, Western Kansas and Texas) was seriously compromised by drought, is not very favourable. At the middle of January, owing to abnormally warm weather, the snow had melted from the greater part of the fields. In the latter half of January and in early February temperature fell sharply and hoarfrost occurred, involving fairly considerable damage to the crops, which had no snow-cover. Only toward the middle of February did crop condition begin to improve consequent on abundant and general rains, especially in the section affected by drought.

In India, where crops had suffered from scarcity of monsoon rains and very low temperature in December, the situation improved toward the end of January and in the first half of February with the coming of general rains.

In North Africa condition of sowings was less satisfactory than last year owing to the abnormally low temperatures of January and the beginning of February. There were complaints in some localities of drought or of excessive moisture.

G. CAPONE.

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Germany: According to the first estimate, the area sown to winter spelt this year is about 213,000 acres against 253,000 acres in 1933-34. That is, a decrease of 16 %.

Austria: Very heavy falls of snow were reported at the beginning, in the middle and at the end of January. Frost was most intense toward the end of the first decade of February.

Sowings of winter cereals were almost everywhere sufficiently covered with snow during the period of most severe frosts.

On 1 February condition of winter cereals was as follows: wheat 2.0 (against 1.9 on 1 January of this year, 2.3 on 1 February); rye 1.8 (1.6, 2.4) and barley 2.0 (2.1, 2.6).

Bulgaria: Mean temperature in January was 1-2° C below normal. Total rainfall during the month was nearly double the normal precipitation.

Notwithstanding the cold and the absence of a snow cover at the beginning of the month, sowings did not undergo frost damage. Snow which subsequently fell frequently in western Bulgaria, protected the sowings from cold and provided satisfactory moisture.

No snow fell in Eastern Bulgaria but there was much rain and no frost damage was reported.

There were sudden snowfalls in Southern Bulgaria on 19 and 30 January accompanied by thunder and lightning.

According to the most recent estimate the area sown to meslin this year is about 207,500 acres against 214,700 in 1933-34 and 242,100 on the average of the five years ending 1932-33; percentages 96.7 and 85.7.

Spain: Crops in the most important producing areas of La Mancha suffered frost damage during the winter. In Old Castile growth was impeded at the beginning of the season by the dry weather but conditions afterwards were fairly good. Continuous cold was experienced in some parts of the central areas. Latest information indicates that temperatures below normal and frost have caused some damage.

Irish Free State: Weather in January was broken and showery during the first half and dry, but cold, during the remainder. Sowings were made at the normal time in most cases. Crop condition was satisfactory, there having been no serious frosts and no snow.

France: Weather between the middle of January and the middle of February was rather mild and wet. Three cold spells, with fairly severe frost and snowfalls, were experienced but they were of brief duration. The last of these, which occurred towards the end of the first half of February was characterised by alternating periods of freezing and thawing. On the whole, however, in spite of the set-back caused by frost, wheat had a good appearance and was even too forward and weeds and para-

Wheat.

COUNTRIES	†) AREA					†) PRODUCTION									
	1934 1934/35	1933 1933/34	Average 1928 to 1932 — 1928/29 to 1932/33	% 1934 1934/35		1934 1934/35	1933 1933/34	Average 1928 to 1932 — 1928/29 to 1932/33	1934 1934/35	1933 1933/34	Average 1928 to 1932 — 1928/29 to 1932/33	% 1934 1934/35			
				1933 — 1934 = 100	Aver. — 1934 = 100							1933 — 1934 = 100	Aver. — 1934 = 100		
1,000 acres					1,000 centals					1,000 bushels					
Germany	5,431	5,727	4,723	94.8	115.0	99,926	123,554	89,191	166,539	205,918	148,649	80.9	112.0		
Austria	568	543	518	104.7	109.8	7,943	8,769	7,162	13,239	14,615	11,937	90.6	110.9		
Belgium	385	372	389	103.5	99.2	8,593	9,040	8,744	14,322	15,067	14,574	95.1	98.3		
Bulgaria	3,089	3,097	2,931	99.7	105.4	24,947	33,273	30,195	41,577	55,453	50,324	75.0	82.6		
Denmark	282	261	253	108.2	111.5	7,496	6,926	6,630	12,493	11,543	11,050	108.2	113.1		
Spain	11,101	11,047	10,964	100.5	101.2	104,162	82,942	89,068	173,600	138,234	148,443	125.6	116.9		
Estonia	161	155	94	103.4	170.8	1,864	1,470	931	3,107	2,451	1,551	126.8	200.4		
Irish Free State	94	50	26	185.8	363.9	2,282	1,190	609	3,803	1,983	1,014	91.8	375.0		
Finland	104	91	44	113.9	237.6	1,567	1,476	628	2,612	2,460	1,046	106.2	249.7		
France	13,109	13,503	13,168	97.1	99.6	198,417	217,401	173,316	330,688	362,328	288,854	91.3	114.5		
Engl. and Wales	1,759	1,660	1,311	106.0	134.1	39,155	35,258	25,420	65,259	58,763	42,365	111.1	154.0		
Scotland	98	78	53	124.5	184.2	2,486	2,083	1,277	4,144	3,472	2,128	119.4	194.7		
Northern Ireland	9	6	4	140.9	224.6	218	136	87	363	227	145	160.0	251.1		
Greece	2) 1,951	1,712	1,391	—	—	18,816	17,031	7,503	31,359	28,385	12,505	110.5	280.8		
Hungary	3,921	3,924	3,969	99.9	98.8	36,869	57,815	47,466	61,447	96,356	79,109	63.8	77.7		
Italy	12,236	12,561	12,009	97.4	101.9	139,614	178,794	146,418	232,686	297,985	244,024	78.1	95.4		
Latvia	351	309	192	113.6	183.1	4,831	4,035	2,109	8,051	6,725	3,515	119.7	229.0		
Lithuania	514	499	479	103.0	107.3	6,285	4,915	5,094	10,475	8,192	8,490	127.9	123.4		
Luxemburg	40	34	27	118.0	145.8	636	597	307	1,061	995	511	106.6	207.5		
Malta	9	10	9	97.0	101.0	186	183	176	310	305	293	101.9	106.1		
Norway	46	28	29	165.1	160.1	701	453	433	1,168	755	722	154.7	161.7		
Netherlands	359	338	178	106.2	201.2	10,318	9,195	4,614	17,196	15,325	7,689	112.2	223.6		
Poland	4,385	4,187	3,908	104.7	112.2	38,081	47,931	40,812	63,467	79,883	68,018	79.5	93.3		
Portugal	—	1,424	1,205	—	—	12,292	9,044	8,302	20,486	15,073	13,837	135.9	148.1		
Romania	7,610	7,701	7,579	98.8	100.4	45,933	71,444	64,429	76,553	119,071	107,380	64.3	71.3		
Sweden	742	799	642	92.8	115.5	17,747	17,522	12,203	29,578	29,203	20,339	101.3	145.4		
Switzerland 4)	211	186	178	113.9	118.9	4,007	3,974	3,300	6,677	6,623	5,500	108.8	121.4		
Czechoslovakia 5)	2,301	2,272	1,993	101.3	115.4	30,009	43,753	30,008	50,013	72,921	50,013	68.6	100.0		
Yugoslavia	5,002	5,257	5,214	95.1	95.9	40,998	57,950	51,703	68,328	96,581	86,170	70.7	79.3		
Total Europe	\$ 77,292	77,831	73,478	99.5	105.4	906,379	1,048,154	858,135	1,510,631	1,746,892	1,430,195	86.5	105.6		
* U.S.S.R. (w)	29,785	26,688	22,734	111.6	131.0	—	257,942	171,741	—	429,894	286,229	—	—		
— (s)	—	55,352	57,725	—	—	—	353,402	306,752	—	588,992	511,243	—	—		
Canada	23,985	25,991	25,531	92.3	93.9	165,509	169,135	246,756	275,849	281,892	411,261	97.9	67.1		
United States (w)	32,945	28,485	39,454	115.7	83.5	243,020	210,475	370,912	405,034	350,792	618,186	115.5	65.5		
Mexico	9,290	19,425	20,431	47.8	45.5	54,861	106,910	145,431	91,435	178,183	242,384	51.3	37.7		
Total North Amer.	1,179	1,173	1,279	100.5	92.2	6,063	7,273	7,163	10,104	12,121	11,939	83.4	84.6		
Chosen	789	790	846	99.9	93.3	5,595	5,332	5,138	9,324	8,887	8,563	104.9	108.9		
India	36,062	32,970	32,356	109.4	111.5	209,619	211,658	204,019	349,365	352,763	340,032	99.0	102.7		
Japan	1,589	1,509	1,219	105.3	130.4	27,346	24,226	18,369	45,577	40,376	30,614	112.9	148.9		
Syria and Leb.	1,175	1,212	1,148	97.0	102.3	8,724	8,086	8,042	14,540	13,476	13,403	107.9	108.5		
Turkey	6,871	7,257	7,357	94.7	93.4	53,129	59,783	51,485	88,546	99,636	85,806	88.9	103.2		
Total Asia	46,486	43,738	42,926	106.3	108.3	304,413	309,085	287,053	507,352	515,138	478,418	98.5	106.0		
Algeria 6)	4,007	3,993	3,771	100.3	106.2	23,843	19,199	18,117	39,738	31,998	30,195	124.2	131.6		
Cyrenaica	22	13	20	165.1	110.1	107	19	52	179	31	86	568.4	207.9		
Egypt	1,442	1,426	1,628	101.1	88.6	22,366	23,971	26,513	37,276	39,951	44,187	93.3	84.4		
Eritrea	11	9	17	128.6	64.3	88	66	24	147	110	40	133.3	366.3		
Kenya	43	35	58	121.9	74.0	359	291	347	598	485	578	123.2	103.5		
French Morocco	3,018	3,209	2,776	94.0	108.7	23,351	17,342	16,268	38,918	28,902	27,113	134.7	143.5		
Tunisia	1,903	1,754	2,005	108.5	94.9	9,590	5,512	8,139	15,983	9,186	13,566	174.0	117.8		
Total North Africa	10,446	10,439	10,275	100.0	101.6	75,704	66,400	69,460	132,839	110,663	115,685	120.0	114.8		
Argentina	(a) 18,484	(a) 19,663	(a) 20,325	94.0	90.9	151,238	171,675	144,542	252,058	286,119	240,898	88.1	104.6		
* Chile	(b) 17,199	(b) 18,041	(b) 18,336	95.3	93.8	—	—	—	—	—	—	—	—		
Uruguay	2,264	2,104	1,606	107.6	140.9	—	21,185	16,120	—	35,307	26,865	—	—		
— (s)	997	1,189	1,034	83.9	96.4	6,769	8,804	5,940	11,281	14,674	9,989	76.9	114.0		
Union of South Afr.	1,523	1,257	1,288	121.1	118.2	(c) 9,206	(c) 6,954	(c) 6,180	(c) 15,343	(c) 11,590	10,300	132.4	—		
Australia	12,965	15,080	15,698	86.0	82.6	81,000	105,222	108,564	135,000	175,370	180,940	77.0	74.6		
New Zealand (s)	—	286	262	—	—	3,900	5,422	4,955	6,500	9,036	8,258	71.9	78.7		
GRAND TOTALS	\$ 234,593	242,935	249,992	96.6	93.8	2,012,062	2,215,509	2,255,091	3,353,426	3,692,470	3,758,443	90.8	89.2		

Rye.

COUNTRIES	†) AREA						†) PRODUCTION							
	1934	1933	Average	% 1934		Aver.	1934	1933	Average	1934	1933	Average	% 1934	
	1934/35	1933/34	1928 to 1932	1933	1934/35		1934/35	1933/34	1928 to 1932	1934/35	1933/34	1928 to 1932	1933	1934/35
			1928/29 to 1932/33	1933/1934					1928/29 to 1932/33			1928/29 to 1932/33	1933/1934	
	1,000 acres			= 100	= 100		1,000 centals			1,000 bushels			= 100	= 100
Germany	11,097	11,180	11,312	99.3	98.1		167,720	192,402	173,724	299,501	343,576	310,223	87.2	96.5
Austria	949	958	936	99.1	101.4		13,382	15,145	11,627	23,897	27,045	20,762	88.4	115.1
Belgium	544	578	565	94.2	96.3		11,649	12,493	12,106	20,802	22,310	21,618	93.2	96.2
Bulgaria	476	516	565	92.3	84.2		3,682	5,422	5,343	6,576	9,683	9,542	67.9	68.9
Denmark	375	353	348	106.0	107.7		6,173	5,543	5,293	11,023	9,899	9,452	111.4	116.6
Spain	1,451	1,458	1,528	99.5	95.0		12,419	11,593	12,083	22,176	20,703	21,577	107.1	102.8
Estonia	364	373	354	97.4	102.6		5,076	4,892	3,706	9,064	8,735	6,618	103.8	137.0
Irish Free State .	2	3	4	71.6	5.9		37	48	67	67	86	120	77.0	55.5
Finland	605	575	527	105.4	115.0		8,704	8,194	6,727	15,543	14,633	12,013	106.2	129.4
France	1,670	1,706	1,815	97.9	92.0		18,280	19,789	18,181	32,643	35,338	32,466	92.4	100.5
Greece	2) 204 3)	183 3)	152	—	—		1,926	1,568	985	3,440	2,800	1,760	122.9	195.5
Hungary	1,632	1,677	1,576	97.3	103.5		11,311	21,087	16,172	20,197	37,655	28,878	53.6	69.9
Italy	278	282	302	98.4	91.9		3,140	3,774	3,629	5,607	6,739	6,481	83.2	86.5
Latvia	663	637	610	104.0	108.7		9,078	7,828	5,572	16,210	13,979	9,949	116.0	162.9
Lithuania	1,225	1,210	1,184	101.2	103.4		14,745	12,170	11,852	26,331	21,731	21,165	121.2	124.4
Luxemburg	19	21	18	94.6	107.4		295	322	233	527	575	416	91.5	126.6
Norway	15	16	17	92.4	83.1		234	245	279	418	438	498	95.5	84.0
Netherlands . . .	450	408	460	110.2	97.7		9,123	8,737	8,798	16,291	15,602	15,711	104.4	103.7
Poland	14,014	14,271	14,061	98.2	99.7		124,747	155,940	140,616	222,764	278,465	251,101	80.0	88.7
Portugal . . . . .	...	409	400	...	...		2,689	2,024	2,613	4,802	3,615	4,665	132.8	102.9
Romania	912	958	868	95.2	105.1		4,653	9,831	7,561	8,308	17,555	13,502	47.3	61.5
Sweden	575	546	588	105.3	97.8		11,685	10,152	8,822	20,865	18,128	15,753	115.1	132.5
Switzerland . . .	35	46	47	76.4	74.0		695	865	854	1,242	1,545	1,525	80.4	81.4
Czechoslovakia . .	2,442	2,584	2,606	94.5	93.7		33,583	45,978	39,525	59,969	82,104	70,580	73.0	85.0
Yugoslavia	613	640	594	95.7	103.1		4,305	5,409	4,431	7,688	9,659	7,912	79.6	97.2
Total Europe . . .	§) 41,019	41,588	41,437	98.6	99.0		479,331	561,451	500,799	855,951	1,002,598	894,287	85.4	95.7
*U. S. S. R. . . (w)	60,318	61,777	64,644	97.6	93.3		...	526,466	464,868	...	940,120	830,124	...	...
— (s)	...	988	1,137	...	...		...	6,614	8,069	...	11,811	14,409	...	...
Canada	735	583	966	126.1	76.1		3,037	2,339	7,122	5,423	4,177	12,718	129.8	42.6
United States . . .	1,937	2,349	3,296	82.5	58.8		8,982	11,844	21,647	16,040	21,150	38,655	75.8	41.5
Total North Amer. .	2,672	2,932	4,262	91.1	62.7		12,019	14,183	28,769	21,463	25,327	51,373	84.7	41.8
Turkey	1,204	696	677	172.9	177.8		6,815	7,521	6,003	12,169	13,430	10,719	90.6	113.5
Algeria 6)	3	3	4	113.8	94.6		24	16	26	43	29	47	150.4	92.1
Argentina	(2) 1,903 (2)	1,767 (2)	1,378 (2)	107.7	138.1		9,921	5,225	4,463	17,716	9,330	7,970	189.9	222.3
(3) 1,458 (3)	904 (3)	811	161.2	179.7										
GRAND TOTALS . .	§) 46,356	46,123	47,191	100.5	98.2		508,110	588,396	540,060	907,342	1,050,714	964,396	86.4	94.1

See notes on page 98.

Barley.

COUNTRIES	t) AREA						t) PRODUCTION									
	1934		1933		Average 1928 to 1932		% 1934 1934/35		1934		1933		Average 1928 to 1932		% 1934 1934/35	
	1934/35	1933/34	1928/29 to 1932/33	1933/1934	Aver.	1934/35	1933/34	1928/29 to 1932/33	1934/35	1933/34	1928/29 to 1932/33	1933/1934	Aver.	1933/1934	1934/35	
	1,000 acres			1,000 centals			1,000 bushels									
Germany	4,030	3,918	3,844	102.9	104.8	70,634	76,459	68,876	147,156	159,292	143,494	92.4	102.1	92.4	102.1	
Austria	416	423	409	98.4	101.6	6,572	7,340	5,774	13,692	15,292	12,029	89.5	113.8	89.5	113.8	
Belgium	97	82	80	106.2	121.4	2,320	2,214	1,895	4,833	4,613	3,948	104.8	122.4	104.8	122.4	
Bulgaria	569	602	603	94.5	94.4	4,090	7,751	7,133	8,522	16,148	14,861	92.8	97.3	92.8	97.3	
Denmark	840	865	893	97.2	94.1	20,944	21,131	23,062	43,634	44,025	48,046	99.1	90.8	99.1	90.8	
Spain	4,502	4,521	4,593	99.6	98.0	61,996	48,005	48,605	129,161	100,009	101,261	129.1	127.6	129.1	127.6	
Estonia	257	256	273	100.4	100.2	2,533	1,791	2,526	5,277	5,371	5,263	141.4	100.3	141.4	100.3	
Irish Free State	143	117	116	121.5	122.6	3,254	2,679	2,642	6,779	5,582	5,503	121.4	123.2	121.4	123.2	
Finland	325	320	288	100.5	112.6	4,817	3,936	3,420	10,056	8,200	7,124	122.4	140.9	122.4	140.9	
France	1,911	1,736	1,837	110.1	104.0	25,063	25,244	24,054	52,215	52,544	50,114	99.3	104.2	99.3	104.2	
Engl. and Wales	861	751	1,063	114.6	81.0	16,285	14,134	19,237	33,927	29,497	40,077	115.2	84.7	115.2	84.7	
Scotland	96	60	95	160.9	101.1	2,016	1,277	1,967	4,200	2,660	4,097	157.9	102.5	157.9	102.5	
Northern Ireland	2	1	2	164.2	141.3	5	33	37	118	70	78	169.9	151.7	169.9	151.7	
Greece	2) 589	3) 553	3) 495	—	—	5,708	5,059	3,443	11,891	10,540	7,172	112.8	165.8	112.8	165.8	
Hungary	1,213	1,197	1,131	101.3	107.2	9,854	18,551	13,874	20,530	38,649	28,906	93.1	71.0	93.1	71.0	
Italy	492	511	556	96.4	88.5	4,486	4,992	5,446	9,347	10,401	11,345	89.9	82.4	89.9	82.4	
Latvia	445	456	432	97.6	103.0	4,801	4,298	3,752	10,002	8,955	7,817	111.7	127.9	111.7	127.9	
Lithuania	503	512	489	98.2	102.8	5,598	5,111	4,851	11,663	10,647	10,107	109.5	115.4	109.5	115.4	
Luxemburg	7	7	10	103.1	76.3	106	106	127	220	220	264	100.1	83.6	100.1	83.6	
Malta 9)	5	6	7	88.6	76.2	114	119	139	238	248	290	96.2	82.2	96.2	82.2	
Norway	147	142	138	103.7	106.4	2,634	2,206	2,326	5,489	4,597	4,846	119.4	113.3	119.4	113.3	
Netherlands	79	44	69	179.0	115.0	2,116	1,109	1,852	4,409	2,311	3,859	190.8	114.3	190.8	114.3	
Poland	2,945	2,882	3,028	102.2	97.3	28,344	31,656	33,191	59,052	65,951	69,148	89.5	84.3	89.5	84.3	
Portugal	—	210	177	—	—	1,126	690	948	2,346	1,438	1,975	163.1	118.8	163.1	118.8	
Romania	4,332	4,485	4,687	96.6	92.4	19,210	41,541	41,907	40,021	86,546	87,308	46.2	45.8	46.2	45.8	
Sweden	261	279	304	93.6	86.0	4,542	4,762	5,101	9,462	9,922	10,628	95.4	89.0	95.4	89.0	
Switzerland	14	17	17	80.4	79.9	224	307	273	467	640	569	72.9	82.0	72.9	82.0	
Czechoslovakia	1,632	1,639	1,762	99.6	92.6	22,804	29,774	29,076	47,510	62,031	60,577	76.6	78.4	76.6	78.4	
Yugoslavia	1,038	1,078	1,075	96.3	96.6	8,997	10,208	8,792	18,744	21,268	18,316	88.1	102.3	88.1	102.3	
Total Europe	§) 27,961	27,680	28,473	101.0	98.2	341,245	372,481	364,326	710,941	776,027	759,022	91.6	93.7	91.6	93.7	
Canada	3,613	3,658	4,778	98.8	75.6	30,596	30,412	50,113	63,742	63,359	104,404	100.6	61.1	100.6	61.1	
United States	7,144	10,009	12,739	71.4	56.1	57,086	74,796	135,764	118,929	155,825	282,841	76.3	42.0	76.3	42.0	
Total North Amer.	10,757	13,667	17,517	78.7	61.4	87,682	105,208	185,877	182,671	219,184	387,245	83.3	47.2	83.3	47.2	
Chosen	2,179	2,484	2,349	87.7	92.8	22,638	21,316	18,966	47,163	44,409	39,514	106.2	119.4	106.2	119.4	
Japan	1,860	1,924	2,151	96.7	86.5	34,324	32,944	37,303	71,509	68,635	77,716	104.2	92.0	104.2	92.0	
Syria and Leb.	611	763	842	80.1	72.6	5,351	6,270	8,100	11,148	13,062	16,875	85.3	66.1	85.3	66.1	
Turkey	3,294	3,312	3,487	99.5	94.4	41,429	35,247	30,511	86,311	73,432	63,566	117.5	135.8	117.5	135.8	
Total Asia	7,944	8,483	8,829	93.7	90.0	103,742	95,777	94,880	216,131	199,538	197,671	108.3	109.3	108.3	109.3	
Algeria 6)	3,093	3,450	3,423	89.7	90.4	19,621	17,276	16,926	40,878	35,992	35,264	113.6	115.9	113.6	115.9	
Cyrenaica	110	71	81	153.5	135.0	292	359	238	608	771	495	81.3	122.8	81.3	122.8	
Egypt	284	292	357	97.3	79.7	4,336	4,434	5,390	9,033	9,237	11,147	97.8	81.0	97.8	81.0	
Eritrea	67	69	48	96.4	139.2	254	205	528	900	800	428	58.7	123.4	58.7	123.4	
French Morocco	3,844	3,752	3,174	102.5	121.1	33,516	24,195	22,965	69,826	50,408	47,844	138.5	145.9	138.5	145.9	
Tunisia	988	927	1,328	106.7	74.4	3,307	3,527	5,113	6,890	7,349	10,656	93.7	64.7	93.7	64.7	
Total Africa	8,386	8,561	8,411	98.0	99.7	61,326	50,223	50,799	127,763	104,633	105,834	122.1	120.7	122.1	120.7	
Argentina	a) 1,841	a) 1,783	a) 1,442	103.3	127.7	20,503	17,284	9,491	42,715	36,010	19,774	118.6	216.0	118.6	216.0	
*Chile	(3) 1,705	(3) 1,379	(3) 960	123.7	177.6	—	—	—	—	—	—	—	—	—	—	
Uruguay	139	233	155	59.1	89.8	—	3,227	2,403	—	6,723	5,006	—	—	—	—	
Uruguay	18	15	11	119.0	174.3	125	113	67	260	235	140	110.6	185.3	110.6	185.3	
New Zealand 8)	—	21	19	—	—	225	365	347	469	761	723	61.6	64.8	61.6	64.8	
GRAND TOTALS	§) 56,792	59,806	64,220	95.0	88.4	614,848	641,451	705,787	1,280,950	1,336,388	1,470,409	95.9	87.1	95.9	87.1	

See notes on page 98.

* St. 2 *Ingl.*

Oats.

COUNTRIES	†) AREA					†) PRODUCTION							
	1934	1933	Average	% 1934		1934	1933	Average	1934	1933	Average	% 1934	
	—	—	1928	1934/35		—	—	1928	—	—	1928	1934/35	
	1934/35	1933/34	to 1932	1933	Aver.	1934/35	1933/34	to 1932	1934/35	1933/34	to 1932	1933	Aver.
			to 1932/33	1933/34	= 100			to 1932/33			to 1932/33	1933/34	= 100
1,000 acres						1,000 centals			1,000 bushels				
Germany	7,773	7,864	8,483	98.8	91.6	120,204	153,277	145,021	375,634	478,986	453,187	78.4	82.9
Austria	743	755	757	98.3	98.1	11,034	11,084	8,976	34,482	34,639	28,051	99.5	122.9
Belgium	735	733	705	100.3	104.2	15,083	18,309	15,296	47,135	57,216	47,801	82.4	98.6
Bulgaria	312	327	322	95.6	96.9	1,610	2,863	2,379	5,032	8,948	7,436	56.2	67.7
Denmark	943	943	972	100.0	97.1	21,605	21,971	22,408	67,516	68,658	70,024	98.3	96.4
Spain	1,877	1,894	1,853	99.1	101.3	16,630	13,111	14,739	51,969	40,972	46,060	126.8	112.8
Estonia	341	343	357	99.5	95.6	3,518	2,565	3,086	10,994	8,015	9,645	137.2	114.0
Irish Free State .	583	635	643	91.9	90.8	12,564	13,982	13,919	39,262	43,693	43,496	89.9	90.3
Finland	1,132	1,130	1,108	100.2	102.1	16,989	14,011	13,452	53,090	43,783	42,038	121.3	126.3
France	8,127	8,315	8,512	97.7	95.5	91,597	125,083	105,446	286,239	390,883	329,516	73.2	86.9
Engl. and Wales .	1,401	1,494	1,725	93.7	81.2	24,998	27,462	30,446	78,120	85,820	95,144	91.0	82.1
Scotland	816	856	866	95.4	94.3	14,448	15,546	15,564	45,150	48,580	48,636	92.9	92.8
Northern Ireland .	280	288	300	97.2	93.3	6,143	5,892	6,071	19,198	18,411	18,972	104.3	101.2
Greece	351	341	308	—	—	2,763	2,962	1,756	8,634	9,257	5,486	93.3	157.4
Hungary	567	570	636	99.4	89.2	4,869	7,884	6,972	15,217	24,637	21,789	61.8	69.8
Italy	1,063	1,107	1,218	96.1	87.3	10,975	12,660	13,730	34,297	39,562	42,908	86.7	79.9
Latvia	742	758	745	97.9	99.5	8,567	7,291	6,584	26,770	22,783	20,574	117.5	130.1
Lithuania	812	848	851	95.7	95.4	8,372	7,289	8,330	26,163	22,776	26,031	114.9	100.5
Luxemburg	68	68	73	100.0	93.3	1,027	1,135	977	3,209	3,548	3,054	90.5	105.1
Norway	226	242	239	93.3	94.6	3,890	3,973	3,921	12,157	12,416	12,254	97.9	99.2
Netherlands . . .	521	537	572	95.4	86.3	5,798	6,401	7,053	18,119	20,004	21,984	90.6	82.4
Poland	5,463	5,447	5,342	100.3	102.3	50,150	59,149	55,110	156,718	184,839	172,218	84.8	91.0
Portugal	413	413	444	—	—	1,709	1,164	1,989	5,340	3,636	6,215	146.9	85.9
Romania	2,044	2,050	2,510	99.7	81.4	12,420	17,779	21,205	38,811	55,558	66,265	69.9	58.6
Sweden	1,696	1,541	1,652	110.0	102.7	26,037	23,425	25,194	81,364	73,202	78,730	111.2	103.3
Switzerland . . .	25	40	47	61.3	52.6	449	814	830	1,404	2,545	2,595	55.2	54.1
Czechoslovakia . .	1,936	1,976	2,060	97.9	94.0	25,992	34,770	31,365	81,224	108,655	98,016	74.8	82.9
Yugoslavia	916	936	957	97.8	95.7	7,351	8,180	6,773	22,972	25,563	21,165	89.9	108.5
Total Europe . . .	§) 41,705	42,251	44,057	98.7	94.7	526,792	620,032	588,574	1,646,220	1,937,585	1,839,290	85.0	89.5
Canada	13,731	13,529	12,979	101.5	105.8	109,181	104,543	127,702	341,190	326,695	399,065	104.4	85.5
United States . . .	30,395	36,701	39,887	82.8	76.2	169,221	234,080	389,647	528,815	731,500	1,217,646	72.3	43.4
Total North Amer. .	44,126	50,230	52,866	87.8	83.5	278,402	338,623	517,349	870,005	1,058,195	1,616,711	82.2	53.8
Syria and Lebanon .	33	30	28	109.7	115.1	320	299	220	1,001	933	686	107.3	145.9
Turkey	419	434	361	96.6	116.0	3,185	4,593	2,703	9,954	14,353	8,447	69.4	117.8
Algeria §)	468	451	584	103.6	80.1	4,063	3,105	4,017	12,697	9,703	12,552	130.9	101.2
French Morocco . .	66	79	82	82.9	80.3	606	603	670	1,894	1,883	2,093	100.6	90.5
Tunisia	49	51	97	96.6	51.0	353	220	818	1,102	689	2,556	160.0	43.1
Total Africa . . .	583	581	763	100.0	76.6	5,022	3,928	5,505	15,693	12,275	17,201	127.9	91.2
Argentina	§) 2) 3,336	§) 3,566	§) 3,693	93.6	90.3	24,912	18,365	21,569	77,850	57,389	67,403	135.7	115.5
*Chile	§) 2,397	§) 1,651	§) 2,132	145.2	112.4	—	2,522	2,217	—	7,881	6,928	—	—
Uruguay	198	264	234	75.3	84.7	—	2,522	2,217	—	7,881	6,928	—	—
Uruguay	229	213	147	107.6	156.1	1,177	1,030	746	3,680	3,218	2,332	114.3	137.8
New Zealand §) . .	—	78	83	—	—	1,068	1,297	1,392	3,337	4,053	4,349	82.3	76.7
GRAND TOTALS . .	§) 89,571	95,468	100,437	93.8	89.2	840,878	988,167	1,138,058	2,627,740	3,088,001	3,556,419	85.1	73.9

(†) The years indicated are those of the harvest, single years referring to the northern hemisphere, double years to the southern. —

* Countries not included in the totals. — §) In calculating the totals account has been taken of the probable area cultivated in some countries for which estimates of production are available but not those of area. — m) Winter crop. — s) Spring crop. — r) Approximate revision. — a) Area sown. — 3) Area harvested. — 4) Including spelt and meslin. — 5) Including spelt. — 6) Estimated on 15 May. — 7) Revised on census basis. — 8) Crop for threshing only — 9) Barley and meslin.

sitic growth were much in evidence. The weather conditions also encouraged insect and cryptogamic attacks. There was, further, some danger of over-rapid growth, which would impair grain production, and of stem disease and rust. An excessively mild and damp winter is never one of the factors contributing to a large crop. There is no serious threat, however, at present. Though inadequate, the effect of frosts was beneficial and a dry cold period may yet retrieve the situation.

Winter work proceeded generally in good conditions and preparatory operations for spring sowings were going forward though they were sometimes held up by the frost, thaw or excessive moisture in heavy lands.

The Minister of Agriculture has drawn attention to the order prohibiting the sowing of wheat on land which was meant to have been sown with winter wheat but which were not actually sown. Owing to the very favourable conditions of the autumn and winter, the number of farmers who would have to make such complementary sowings is undoubtedly very small. The Minister has noted many infractions of the law forbidding the sowing of wheat on land which grew a cereal last year and has stated that legal steps are being taken to prevent such infractions.

According to private estimates, the extent of sowings up to 1 January is greater than that indicated in the official estimates.

Great Britain and Northern Ireland: The weather during January was varied, spells of frost and snow being interspersed with mild, wet and foggy conditions. On the whole, the month in England and Wales was favourable to agriculture but a few more hard frosts would benefit the heavy lands. In Scotland, there was some frost, but it was neither severe nor sustained, while in some parts there was snow during the latter half of the month, but it was not sufficiently heavy to cause any serious inconvenience or damage.

The mild weather experienced so far has favoured the growth of autumn sown crops and their condition at the end of January was everywhere reported to be satisfactory. Wheat is strong and healthy everywhere and late-sown wheat has come up well. The other cereals also had a good appearance.

Weather conditions generally in England and Wales did not seriously interfere with general field work or cultivation, though in a few areas the progress made was slow. Work is generally well forward, however, for the time of year. Excellent progress was made in Scotland with the preparation of the land for spring sowings and farm work in general is well advanced in most districts.

Greece: Cereals are developing normally but flood damage in the north appears to be fairly considerable.

Hungary: During the five weeks between 12 January and 16 February weather was marked by temperatures rather below normal, by frequent falls of snow, sometimes by severe snowstorms and, in the greater part of the country by a higher than average rainfall. Night temperatures were extremely low towards the end of the period considered.

During the coldest period of January there was a sufficiently thick cover of snow in all parts of the country. At the end of the period mentioned the sowings of winter cereals were still covered with snow except in some provinces.

The sowings began the winter in very healthy conditions and were able to survive the frosts even in the few areas where they were without the protection of a snow cover. No damage to winter cereals resulting from frost, insects or field-mice was reported.

Italy: Temperature fell appreciably during January and there were falls of snow in several areas. Wheat and other cereal crops benefited from these conditions except in some parts of Southern Italy and in the islands where crops suffered from the excessively wet weather and where, consequently, there was some damage. Wheat, however is in general showing good development. Some insect damage in Tuscany and fieldmice attacks in some provinces in Southern Italy were recorded.

Latvia: Weather was extremely cold during the first half of January, particularly between 3 and 12 January when the temperature fell to -20°C . Temperature was higher in the second half and reached 3 to 6 above normal and there were cases of thawing. The cold weather returned at the end of the month. Rainfall was about normal for the month. Towards the end of January the ground was frozen to a depth of 50 cms.

Lithuania: Weather during January was favourable to the winter crops. The hard frozen soil was covered by a thin layer of snow and changes in temperature were slight.

Portugal: January was characterized by unusual drought but until the middle of the month the lack of moisture was tolerable because of the abundant rains in December. In the latter half of the month frosts, cold north and northeast winds and the absence of rains appreciably hindered normal development of the crops in the principal centres of production of wheat and rye.

Romania: In the second half of January temperatures were higher than in the first half, which was characterized by very severe frosts and absence of precipitation. Rains and snow were abundant between 15 and 31 January. At the beginning of February the fields were adequately covered with snow. With the relatively high day temperatures the snow melted.

In the north and particularly in Moldavia there was flooding which did not, however, cause any serious damage to sowings.

Yugoslavia: Weather was changeable in January and in the first ten days of February. Snow had fallen to a considerable extent at the beginning of January and the fields had a thick cover which successfully saved the sowings from the rather severe frosts which were experienced during this period.

U. S. S. R.: The weather was not so cold in the second half of January as in the first, especially in the north of the country. The temperature again fell in the first half of February in nearly all parts. At the middle of February the snow line in the South of the Union stretched from Novorossiisk to Astrakhan so that the greater part of the country between the Black Sea and the Caspian Sea was free of snow.

Preparatory work for spring sowings was in progress at the middle of the month in the southern parts of Central Asia, in the Trans-Caucasus and North Caucasus regions.

No official report on the crop condition of winter cereals has yet been published. However, judging from isolated information on particular regions, there are grounds for believing that in the southern part of the Union (Southern Ukraine and North Caucasus) winter seedings have suffered some damage caused by frost and the ice crust.

Figures of the area to be sown with cereals in the spring of 1935 according to the plan approved by the Government are given below with comparisons with the figures of the 1934 plan.

Spring Cereals	1935 (Plan)	1934 (Plan)
	Acres	
Wheat	57,365,000	57,428,000
Barley	19,097,000	18,971,000
Oats	43,150,000	41,947,000

Argentina: Toward the end of January the cereal harvest was in full swing though in some *départements* there were complaints of excessive soil moisture, which hindered threshing. According to an official estimate on 21 January the amount of wheat exportable in the current season was 97,070,000 centals (161,780,000 bushels).

Canada: The area cultivated to buckwheat in 1934 was about 407,200 acres against 398,300 in 1933 and 442,500 on the average of the five years ending 1932; percentages 102.2 and 92.0. The corresponding production is estimated at about 4,145,000 centals (8,635,000 bushels) against 4,072,000 (8,483,000) and 4,571,000 (9,523,000); percentages 101.8 and 90.7.

The area cultivated to mixed grains was about 1,159,000 acres against 1,167,300 in 1933 and 1,159,600 on the average of the five years ending 1932; percentages 99.3 and 100.0. The corresponding production is estimated at about 17,067,000 centals (37,926,000 bushels) against 14,874,000 (33,009,000) and 17,786,000 (39,525,000); percentages 114.9 and 96.0.

The following are the average yields obtained in Canada in 1934 and 1933:

	bushels per acre	
	1934	1933
Wheat.	11.5	10.8
Rye	7.4	7.2
Barley.	7.6	17.3
Oats	23.4	22.7

Chile: The wheat crop this year is estimated to be much below the crop of 1933-34 owing to the generally unfavourable weather experienced in the principal producing areas of the country.

United States (Telegram of 31 January): Heavy rainfall was general in the extreme North-West and there were heavy snowfalls in the Middle and North Atlantic Coast Sections, the effect of these being especially beneficial in the Eastern Ohio Valley. Serious damage to winter wheat and oats resulting from excessive cold was reported from Oklahoma and Texas.

(Telegram of 7 February): Weather was dry everywhere. It was cold in the Atlantic States but warm in the North-West. Snow and ice had almost disappeared from the Ohio Valley and crop condition of winter wheat was satisfactory in this area as well as in Iowa and Missouri where the ice was diminishing. Winter wheat in Texas was recovering from the cold but much of the oat crop was totally destroyed. The condition of winter cereals elsewhere was satisfactory. The soil in the Mississippi Valley was in very good condition and there was sufficient moisture in most of the eastern sections.

(Telegram of 15 February): Weather was mild except in the North-East. General rainfall improved the condition of the soil in Texas, Arizona and Southern California. The crop condition of winter cereals in Texas improved considerably during the week. Weather in the Eastern Ohio Valley, in the extreme South-East and in the Great Plains from North Dakota southward was dry and rain was needed urgently in these areas. Snow fell in the lake regions and in the Upper Mississippi Valley.

(Telegram of 21 February): Weather over a large part of the country was mild with beneficial rainfall in the Central Section and the South-east winter wheat States and in the Eastern Great Plains, especially in Eastern Kansas, Oklahoma and the dry South-east. The crop condition of winter cereals in Texas improved further during the week. Slight damage was reported from the Ohio Valley where freezing and thawing occurred but crop condition is fair to good.

According to the most recent estimate area cultivated to buckwheat in 1934 was about 480,000 acres against 462,000 in 1933 and 568,000 on the average of the five years ending 1932; percentages 103.9 and 84.6. The corresponding production is estimated at about 4,350,000 centals (9,062,000 bushels) against 3,765,000 (7,844,000) and 3,973,000 (8,277,000); percentages 115.5 and 109.5.

India (Telegram of 7 February): Condition of the wheat crop on irrigated lands is generally average to good and elsewhere below average to average.

Japan: Weather was favourable to cereals.

Syria and Lebanon: Sowings were made generally in advance of last year's in very favourable weather. Germination was regular, favoured by the rains. Growth is satisfactory.

Algeria: Up to the end of January weather remained practically the same and the features reported last month were accentuated: a very excessive humidity in the east, satisfactory crop condition in the centre, in the *département* of Algiers, persistent and serious drought in the west and Oran. Temperature underwent a very appreciable decline, which checked too vigorous growth in the east and centre; in the east the harmful effect of severe frosts was added to that of drought, and crop condition appeared somewhat compromised.

In the last decade of January temperature fell further and there was heavy snow over all the territory, while the excessive humidity reported in Constantine was further accentuated in a harmful manner, the situation was very appreciably improved in the west, especially on the plain of Cheliff and in Oran by the abundant rain. In the first week of February the weather was dry and very cold, with severe frosts which did not damage the snow covered plants and which improved the land.

At the beginning of February crop condition was good in the centre, rather mediocre in the west and especially in the east; losses through drought and frosts in the latter area will have an especially unfavourable effect on soft wheat, which is principally cultivated but, as this crop is cultivated essentially by Europeans with improved methods it is considered that the damage will prove limited.

Cyrenaica: In January the weather favoured sowings, which were carried out regularly. Rain was plentiful and well-distributed.

Germination was normal save for some damage from excessive soil moisture.

The 1934-35 season has begun well and promises good results.

Egypt: The growth of wheat and barley was slow during January owing to severe cold. Chlorosis appeared in some of the early-sown fields and caused weakness, but some of these are recovering their natural condition. The crops in the north of the Delta benefited by the light rains. The early crops were forming ears in Lower and Upper Egypt.

French Morocco: Both native and European sowings were finished at the end of January. Although it is possible at present to form only a very rough idea of the extent of the sowings, they appear to be larger in some areas than those of last year when the area was smaller than that of 1932 but larger than the average area of the preceding five years. Moreover, it was observed that, though the natives have not suffered from the economic situation owing to the abundance of the last harvest, the European settlers often experienced serious difficulties in carrying out their sowing intentions. In fact, a slight contraction is noticeable in the sowings of soft wheat among the European holdings in Chaïa which is the chief area growing this cereal. On the whole, so far as it is possible to judge at present, the area of wheat sowings appears to be about the same as the average of the five years previous to 1934. Compared with last year it will be somewhat smaller in the case of soft wheat which is principally grown by Europeans and greater in the case of hard wheat and barley the last two cereals being grown chiefly by the natives.

A long dry period prevailed from the end of December until about 20 January. This was very unfavourable in its effects on the crops, particularly on those of the natives, but the situation made a good recovery after the rains of the end of January. On the whole sprouting was satisfactory, and the appearance of crops at the end of January was good.

Preparatory work for spring sowings and fallow work on European holdings began in January.

Union of South Africa: In the Cape South Western districts some excellent yields were obtained in a few districts, but generally threshing results in December were disappointing. Late rains during November and rust caused a considerable amount of damage especially to the quality of the grain. Late frost and rust caused many crops in the North Western districts to be a complete failure. Yields along the South Coast were also not up to expectation. In the North Eastern districts of the Cape crops are in excellent condition, and although rust has made its appearance in late-sown wheat, record yields are reported.

In the Orange Free State a record crop is expected. Even lands sown during July and later promise to give a good crop. Farmers are still busy reaping and threshing.

In the Transvaal the crop has already been reaped, and generally very satisfactory yields were obtained.

Australia (Telegram of 14 February): The results of the harvest now completed are below expectations in Western Australia and Victoria, and satisfactory in South Australia, while in New South Wales harvesting was carried out in poor conditions.

MAIZE

Yugoslavia: The maize of the 1934 crop is of very good quality as a result of the good ripening, the absence of insect damage and the favourable conditions in which the harvest was carried out.

U. S. S. R.: According to the Government plan the areas to be sown to maize (including sorghum) in 1935 have been fixed at 8,463,000 acres.

Argentina: During the first half of February early-sown maize was developing and ripening in excellent condition. Late-sown was also in excellent condition, but will require more rain in the future. Locusts were sporadically hatching out, but the pest was being combated. The exportable surplus of old crop maize, on January 21 was officially estimated at 8,421,700 centals (15,038,800 bushels).

Maize.

COUNTRIES	AREA					PRODUCTION								
	1934	1933	Aver. 1928 to 1932	% 1934 and 1934/35	Average 1933/1934 = 100	1934	1933	Average 1928 to 1932	1934	1933	Average 1928 to 1932	% 1934 and 1934/35		
	1934/ 1935	1933/ 1934	1928/ 1929 to 1932/ 1933	1933 1933		1928/29 to 1932/33	1934/35	1933/34	1928/29 to 1932/33	1933 1934	1928/29 to 1932/33	1933 1934		
	1,000 acres					1,000 centals			1,000 bushels of 56 lb.			= 100		
Austria . .	160	159	148	101.0	108.1	3,303	3,011	2,667	5,897	5,377	4,763	109.7	123.8	
Bulgaria . .	1,658	1,796	1,757	92.3	94.3	18,067	20,967	17,660	32,262	37,441	31,536	86.2	102.3	
France . .	823	832	843	98.8	97.5	11,452	9,589	10,516	20,449	17,123	18,778	119.4	108.9	
Greece. . .	586	645	555	90.8	105.6	5,291	6,026	3,755	9,448	10,760	6,706	87.8	140.9	
Hungary . .	2,807	2,816	2,726	99.7	103.0	46,334	39,889	37,085	82,740	71,230	66,223	116.2	124.9	
Italy. . (s)	3,271	3,190	3,391	102.5	96.5	64,330	52,549	50,695	114,874	93,837	90,528	122.4	126.9	
Italy. . (t)	384	346	252	111.1	152.3	6,059	4,564	2,733	10,820	8,151	4,880	132.7	221.7	
*Poland . .	225	225	231	99.9	97.2		1,232	2,090		2,200	3,732			
Romania . .	12,368	11,928	11,470	103.7	107.8	105,822	100,408	113,401	188,969	179,301	202,502	105.4	93.3	
Switzerland. .	2	2	3	81.3	74.0	55	63	71	99	113	126	87.2	78.4	
Czechoslov..	x) 359	316	351	113.4	102.3	a) 5,447	3,370	5,466	a) 9,728	6,018	9,760	161.6	99.7	
Yugoslavia .	6,578	6,272	5,761	104.9	114.2	113,631	78,883	76,843	202,912	140,863	137,220	144.0	147.9	
Total Europe	28,996	28,302	27,257	102.5	105.4	379,791	319,319	320,892	678,198	570,214	573,022	118.9	118.4	
Canada . .	161	137	143	117.9	112.8	3,807	2,830	2,997	6,798	5,054	5,351	134.5	127.0	
United States	87,486	103,260	102,768	84.7	85.1	773,202	1,316,928	1,434,802	1,380,718	2,351,658	2,562,147	58.7	53.9	
Cambodia . .	741	297	92	250.0	802.4	9,921	3,748	1,079	17,716	6,693	1,927	264.7	919.2	
Syria & Leb.	61	67	76	90.9	80.0	646	573	837	1,154	1,024	1,494	112.7	77.2	
Turkey. . .	778	942	884	82.6	88.0	7,108	12,502	10,707	12,692	22,324	19,121	56.9	66.4	
Algeria . .	25	25	23	100.7	107.9	165	127	146	295	228	260	129.7	113.4	
Egypt . .	1,632	1,638	2,036	99.6	80.1	34,653	32,536	41,658	61,880	58,101	74,389	106.5	83.2	
Eritrea . .	11	27	21	40.9	52.3	79	220	177	142	394	317	36.0	44.7	
Kenya 3)	123	113	193	109.0	63.8	1,941	1,494	2,604	3,467	2,667	4,650	130.0	74.6	
French Mo- rocco . .	986	887	714	111.0	138.1	5,425	3,096	3,171	9,688	5,528	5,663	175.3	171.1	
Tunisia 4)	44	37	44	120.0	101.7	132	132	130	236	236	232	100.0	101.7	
*Argentina 5)	17,372	16,097	13,714	107.9	126.7	...	130,095	170,217	...	232,314	303,960	...	...
TOTALS . . .	121,044	135,732	134,251	89.2	90.2	1,216,870	1,693,505	1,819,200	2,172,984	3,024,121	3,248,573	71.9	66.9	

* Country not included in the totals. — s) Spring crop (*maggengo*). — t) Summer crop (*cinquantino*). —

x) Of which 218,000 acres unmixed crop and 141,000 acres mixed crop. — 2) Of which 3,538,000 centals (6,319,000 bushels) from unmixed crop and 1,909,000 centals (3,409,000 bushels) from mixed crop. — 3) European crop. — 4) Maize and sorghum. — 5) Area sown.

The Argentine Minister of Agriculture has suggested that growers should refrain from harvesting their crops before they are ripe, as the excessive dampness of the maize makes it unfit for exportation. It is also proposed that the Grain Exchange should strictly enforce the prohibition of mixing fresh and dried maize and restrict the tolerance in respect of rot and other defects. The degree of humidity allowed should also be reduced.

Indo-China: The early autumn maize crop sown in August-September was good in some areas in South Annam. The late sowings, on the other hand, suffered in the November drought and yields were unsatisfactory. Growth of the crop in North Annam was good at the end of December and very good in some places.

Spring sowings made about the middle of December sprouted uniformly in North Annam. They were fairly good also in the south. The development of dry season crops cultivated in one of the central provinces was satisfactory. In Cambodia the sowings made as the floods withdrew, benefited from the rains of the end of December.

French West Africa: The aspect of the crop in the Sudan is good and information previously received from the other colonies indicates a good crop for the whole of French West Africa.

Union of South Africa: According to the preliminary data of the census the 1933-34 crop amounted to 47,802,000 centals (85,361,000 bushels). As the new census data involve considerable revisions in the figures for the years since the previous census the figures previously published in the Crop Report for 1932-33 and the five-year average are not comparable with the census figure of 1933-34.

In December the excessive rains in the northern provinces hampered farming operations. Many lands were waterlogged and reports indicated that stalkborers were very prevalent this season. Locusts have also caused a fair amount of damage.

RICE

Formosa: Growing conditions of first crops rice are good. In southern areas transplanting has begun.

India: According to the fourth provincial forecast the area sown in Burma for the 1934-35 crop was 12,683,800 acres, a decrease of 134,500 acres on the corresponding estimate and 234,900 less than the final figure for last season. In Lower Burma, however the fourth forecast of 9,704,500 acres is 3,500 acres large than the corresponding estimate of 1933-34 and only 3,300 less than that seasons final figures. The area destroyed in Burma as a whole is smaller than last year and the area likely to mature, 12,372,500 acres, is 100,000 acres less than the corresponding estimate and 91,800 less than the final figure of last season. In Lower Burma the area destroyed is larger but the area, likely to mature was 9,600,600 acres, only 17,300 acres and 4,300 acres less than the corresponding and final estimates respectively of 1933-34. In Lower Burma condition figures on 15 January were very considerably reduced as compared with the corresponding estimates of last year in Bassein, Henzada, Prome, Tharraddy and Pegu while there were also reductions, though smaller, in Maubin, Pyapon and Hanthawaddy. In Upper Burma Shwebo and Katha showed decreases and for the whole of that part of the Province crop condition was 82 against 86 last year. In Arakan damage was done by high tides in November and most districts of Lower Burma complain of shortness of the late rains and damage by insects. Irrigated crops in Upper Burma were on the whole good. The district reports received indicated that the 1934-35 crop would yield about 11,903 million pounds of rice and rice products against 13,002 million estimated at the same date last season, a decrease of 8.5 %. On a consideration of the actual exports of past years the exportable surplus of the 1934-35 crop was estimated at 7,504 million pounds of rice and rice products.

In Madras light rain fell in the latter part of January and at the beginning of February crop condition was fair except in a few districts where rain had been insufficient.

Indo-China: At the end of December the crop of the second semester had been harvested in the north of the Union and harvesting was being completed in the centre and south.

In Tonkin the crop of the tenth month was mediocre either because of excessive water, which hindered development, or because of violent winds, which hindered grain-formation. The total production of Tonkin including rice of the fifth month, is 12-15 % below that of the last ten years.

In Annam the crop of the tenth month was fairly satisfactory, especially given the unfavourable conditions in the North, where the average yield is 9-11 centals (20-24 bushels) per acre; in Central Annam harvesting, completed in the majority of provinces, continued elsewhere and was giving normal yields; in South Annam yields of the crop of the tenth month were generally fairly good but late rices of the twelfth month suffered from cold at the beginning of December and production appeared likely owing to this fact to be appreciably smaller.

Rice.

COUNTRIES	AREA					PRODUCTION OF ROUGH RICE							
	1934/35	1933/34	Average 1928/29 to 1932/33	% 1934/35		1934/35	1933/34	Average 1928/29 to 1932/33	1934/35	1933/34	Average 1928/29 to 1932/33	% 1934/35	
				1933/ 1934	Average 1934							1933' 1934	Average age = 100 = 100
1,000 acres					1,000 centals			1,000 bushels of 45 lb.					
Bulgaria . .	15	17	18	86.0	79.0	298	291	338	662	646	750	102.5	88.3
Italy	323	316	337	102.1	95.8	13,602	13,398	14,437	30,226	29,772	32,081	101.5	94.2
United States	781	792	924	98.6	84.5	17,233	16,676	19,358	38,296	37,058	43,017	103.3	89.0
*Chosen . . .	3,938	4,160	3,985	94.7	98.8	...	74,440	62,683	...	165,418	139,293	...	...
Taiwan 1) . .	935	961	863	97.3	108.3	18,251	17,634	15,703	40,557	39,186	34,894	103.5	116.2
India 2) . . .	81,026	83,102	82,605	97.5	98.1	668,192	691,331	714,874	1,484,871	1,536,292	1,588,608	96.7	93.5
<i>Indo-China:</i>													
Annam 3) . .	945	948	1,021	99.7	92.5	7,540	8,598	7,435	16,755	19,106	16,522	87.7	101.4
Tonkin 4) . .	1,840	2,080	2,069	88.5	88.9	20,199	24,911	25,913	44,886	55,356	57,583	81.1	77.9
Japan	7,776	7,779	7,915	100.0	98.2	206,675	289,882	241,076	459,268	644,169	535,713	71.3	85.7
Siam 5) . . .	8,461	8,019	7,596	105.5	111.4	114,288	110,402	95,982	253,968	245,333	213,289	103.5	119.1
Syria & Lebanon . .	2	1	6)	197.7	494.3	19	15	5	43	34	12	123.9	364.0
Turkey	74	51	52	143.1	140.1	1,256	957	747	2,791	2,126	1,661	131.3	168.1
Egypt	396	438	301	90.4	131.4	11,200	11,775	8,054	24,887	26,166	17,898	95.1	139.0
Totals	102,574	104,504	103,701	98.2	98.9	1,078,753	1,185,870	1,143,922	2,397,210	2,635,244	2,542,028	91.0	94.3

*) Countries not included in the totals. — 1) Second crop. — 2) Third estimate. — 3) First half-year. — 4) Rice of the tenth month. — 5) First estimate. Area sown and production in the whole country. The corresponding figures for the harvested area are as follows: 7,591; 7,448; 6,589; 10.9; 115.2. — 6) Area inferior to 500 acres.

In Cochin-China the early rices gave satisfactory yields in eastern and central provinces. Harvesting of main crop rice began in the eastern provinces, where the yield is frequently poor, owing to damage by floods or wild animals; main crop and late rice is late, having begun to suffer from the cold and *tim* in these provinces. In the

Centre development was generally satisfactory save in some provinces where caterpillars and drought had caused some damage. In the western provinces the rain at the end of December caused some large but apparently rather localized damage.

In Cambodia, at the end of December the harvesting of light padis had ended while that of average padis was continuing. Owing to the long periods of drought and to insects, yields have been reduced in some localities, while the floods of the Mekong damaged floating rice. On the whole it is, however, considered that the crop will be better than that of last year.

Sowings for the coming season were generally carried out in fairly satisfactory conditions. At the end of December the padis had been prepared in Tonkin for the crop of the fifth month, transplanting was proceeding actively and the weather was favourable to development of the seed and young plants. In Annam, transplanting, which was proceeding in all provinces, was hindered in the south by drought; in the centre the young plants suffered from during winds. Transplantings had been practically terminated in the central provinces of Cochin-China and had begun in the west.

British Malaya: December was abnormally dry throughout the Peninsula. Drought prevailed in practically all localities for the first three weeks of the month. It was considered that a further prolongation of unfavourable conditions would have a serious effect upon yields in the late-planted areas of Kedah, Province Wellesley Central, Penang and the riverine *mukims* of Perak and Krian. In the latter efforts were being made to maintain the water-level till the grain had set.

Harvesting was in full swing in parts of Province Wellesley, Malacca, Pahang, Negri Sembilan and Selangor, in all of which satisfactory yields were reported. In some districts of Negri Sembilan very strong north-easterly wind during the earlier part of the month laid large areas of padi.

French West Africa: Despite fairly long periods of drought and rather large flights of locusts, the crop appears to be good in the Sudan, which is the largest producer of the group. Information previously received for the other colonies indicates a good crop for French West Africa as a whole in 1934-35.

POTATOES

Some slight changes only have been made in the estimates of potato production since the publication of the *Crop Report* for January. Attention should be drawn, however, to the revision which has been made in the estimate of production of Czechoslovakia which occupies the fourth place in potato production. As a result of this revision production in this country, instead of being 5.3 % smaller than last year's output and 17.3 % below the average, is now 16.7 % and 1.3 % greater respectively. The total production of those countries for which estimates are available is greater than it appeared to be in January and is now 6.8 % greater than last year's figure and 5.2 % above the average.

France: Preparations for sowings of early varieties were made in good conditions in Brittany and at the end of January it was expected that sowings would be carried out rapidly.

Potatoes.

COUNTRIES	AREA					PRODUCTION							
	1934	1933	Average 1928 to 1932	% 1934		1934	1933	Average 1928 to 1932	1934	1933	Average 1928 to 1932	% 1934	
				1933	Average							1933	Average
			1,000 acres	= 100	= 100			1,000 centals			1,000 bushels of 60 lbs	= 100	= 100
Germany . .	7,183	7,139	7,014	100.6	102.4	1,031,340	971,612	967,078	1,718,865	1,619,320	1,611,765	106.1	106.6
Austria . .	506	504	476	100.3	106.2	61,628	51,918	58,763	102,712	86,528	97,937	118.7	104.9
Belgium . .	393	404	419	97.2	93.7	70,077	81,336	81,661	116,793	135,558	136,099	86.2	85.8
Bulgaria . .	37	35	30	104.4	121.6	2,490	1,784	1,149	4,150	2,973	1,916	139.6	216.6
Spain . . .	...	976	943	...	...	100,676	107,627	99,911	167,790	179,374	166,515	93.5	100.8
Estonia . .	177	169	163	105.0	109.1	19,668	20,923	16,555	32,779	34,871	27,591	94.0	118.8
Irish Free St.	343	341	353	100.5	97.0	56,999	55,972	56,170	94,999	93,286	93,617	101.8	101.5
Finland . .	212	199	179	106.4	117.9	22,928	28,258	18,972	38,213	47,096	31,619	81.1	120.9
France . . .	3,441	3,436	3,531	100.1	97.4	339,222	326,767	326,926	565,359	544,601	544,866	103.8	103.8
Engl. a. W.	487	519	477	93.9	102.3	77,034	77,907	69,911	128,389	129,845	116,515	98.9	110.2
Scotland . .	140	153	138	91.8	101.6	23,005	24,125	21,903	38,341	40,208	36,505	95.4	105.0
N. Ireland .	137	139	144	98.8	95.4	20,673	21,250	22,214	34,455	35,416	37,022	97.3	93.1
Greece . . .	49	43	29	114.2	170.0	...	2,493	1,189	...	4,155	1,982	...	...
Hungary . .	723	726	693	99.6	104.3	49,669	40,910	37,413	82,780	68,182	62,354	121.4	132.8
Italy . . .	989	985	930	100.4	106.3	59,672	52,340	45,208	99,451	87,232	75,346	114.0	132.0
Latvia . . .	266	257	225	103.4	118.4	31,875	30,921	21,473	53,123	51,534	35,788	103.1	148.4
Lithuania .	452	441	370	102.4	122.2	54,965	40,222	37,422	91,606	67,035	62,368	136.7	146.9
Luxemburg .	41	41	41	100.1	99.5	4,700	3,794	4,421	7,834	6,323	7,368	123.9	106.3
Malta . . .	7	7	7	96.8	95.0	406	451	632	676	752	1,053	89.9	64.2
Norway . .	120	120	119	100.2	100.9	17,649	21,534	19,515	29,414	35,890	32,525	82.0	90.4
Netherlands	351	380	426	92.6	82.4	54,895	67,319	77,025	91,490	112,196	128,372	81.5	71.3
Poland . . .	6,915	6,770	6,546	102.1	105.6	700,366	624,573	667,013	1,167,253	1,040,934	1,111,666	112.1	105.0
*Romania 1)	505	489	487	103.3	103.7	...	30,082	41,815	...	50,136	69,691	...	...
Sweden . .	327	327	339	100.0	96.5	35,054	43,597	39,540	58,422	72,659	65,899	80.4	88.7
Switzerland .	112	117	115	95.7	97.3	17,204	18,338	15,191	28,674	30,563	25,318	93.8	113.3
Czechoslov.	1,845	1,819	1,780	101.4	103.7	211,057	180,826	208,300	351,755	301,371	347,159	116.7	101.3
Total Europe	26,680	26,004	25,458	100.7	102.9	3,063,252	2,894,304	2,914,366	5,105,323	4,823,743	4,857,183	105.8	105.1
Canada . .	569	528	564	107.9	100.9	48,095	42,745	46,017	80,158	71,242	76,694	112.5	104.5
United States	3,303	3,194	3,243	103.4	101.8	231,172	192,122	218,020	385,287	320,203	363,367	120.3	106.0
Syria & Leb.	17	17	18	101.9	97.8	886	672	1,008	1,477	1,120	1,679	131.9	88.0
Turkey . . .	64	109	89	58.8	72.0	2,774	3,673	2,107	4,624	6,122	3,512	75.5	131.7
Algeria . { s)	14	18	27	80.4	52.0	851	1,069	908	1,418	1,781	1,513	79.6	93.7
{ i)	25	22	26	114.5	95.8	1,488	1,054	973	2,480	1,756	1,622	141.2	152.9
TOTALS . .	30,172	29,892	29,425	101.0	102.6	3,348,518	3,135,639	3,183,399	5,580,767	5,225,971	5,305,570	106.8	105.2

*) Countries not included in the totals. — s) Early crop. — i) Main crop. — 1) Unmixed crop.

Great Britain and Northern Ireland: Potatoes are keeping comparatively well and little disease has been found, but in Northern Ireland the mild weather conditions have been responsible for some sprouting.

U. S. S. R.: According to the Government plan the areas to be sown to potatoes in 1935 have been fixed at 16,769,000 acres.

Algeria: The very low temperatures which prevailed at the end of January caused appreciable damage in early potato fields (spring crop).

THE SUGAR CAMPAIGN

In this issue a table showing the first estimates of the production of cane sugar in the present campaign, 1934-35, compared with the final figures of the 1933-34 campaign and with the average of the five preceding years, is published for the first time this year.

Production of Cane-sugar.

COUNTRIES	1934-35 1)	1933-34	Average 1928-29 to 1932-33	1934-35 1)	1933-34	Average 1928-29 to 1932-33	Percentages for 1934-35	
							1933-34 = 100	Average = 100
							%	
Thousand cents			Short tons					
AMERICA.								
Argentina	7,518	6,961	7,863	376,000 ²	348,045	393,136	108	96
Brazil.	15,432	14,330	22,000	800,000	720,000	1,099,986	108	70
Cuba	51,853	50,945	78,613	2,593,000	2,547,193	3,930,573	102	66
Ecuador	441	441	451	20,000	20,000	22,554	100	98
United States (La) . .	4,560	4,100	3,584	228,000	205,000	179,200	111	127
Guadeloupe	882	921	578	40,000	46,073	28,895	96	153
Jamaica	1,676	1,609	1,291	84,000	80,000	64,536	104	130
Mexico	5,291	4,145	4,742	260,000	207,000	237,082	128	112
Peru	8,819	9,538	8,676	440,000	476,902	433,772	92	102
Puerto Rico	15,763	22,077	16,222	788,000	1,103,311	811,101	71	97
Dominican Republic .	8,047	8,565	8,306	402,000	428,250	415,308	94	97
Total America . . .	120,282	123,632	152,326	6,031,000	6,182,274	7,616,143	97	79
ASIA.								
Formosa	19,842	14,265	17,725	1,000,000	713,223	886,223	139	112
India 2)	113,904	109,133	78,266	5,695,000	5,457,000	3,913,000	104	145
Japan 3)	2,321	1,635	1,915	116,024	81,740	95,773	142	121
Java	10,141	13,604	55,081	510,000	680,184	2,753,998	75	18
Philippine Is. 4) . . .	17,637	31,526	21,572	900,000	1,580,000	1,078,572	56	82
Total Asia.	163,845	170,163	174,559	8,221,024	8,512,147	8,727,566	96	94
AFRICA.								
Egypt.	2,870	3,406	2,892	145,000	170,303	144,583	84	99
Madagascar	190	183	133	9,500	9,150	6,650	104	142
Mauritius	3,920	5,764	4,954	196,000	288,200	247,720	68	79
Reunion	1,543	1,707	1,042	80,000	85,350	52,107	90	148
Union of South Africa	7,160	7,823	6,690	358,000	391,173	334,471	91	107
Total Africa	15,683	18,883	15,711	788,500	944,176	785,531	83	100
OCEANIA.								
Australia	13,889	14,358	12,304	690,000	717,913	615,180	97	113
Hawaii	20,503	20,580	19,557	1,030,000	1,028,990	977,817	100	105
Fiji Is.	2,491	2,579	2,170	125,000	129,000	108,508	97	115
Total Oceania	36,883	37,517	34,031	1,845,000	1,875,903	1,701,505	98	108
GENERAL TOTALS . .	336,693	350,195	376,627	16,885,524	17,514,500	18,830,745	96	89

1) Approximate data. — 2) Production of *gur*. — 3) Production of sugar (refined and raw) and molasses. — 4) Production of sugar and *panocha*.

This table, though the figures for some countries are lacking, may be considered to be complete for practical purposes since it covers a number of countries the total cane sugar production of which exceeds 95 % of the world output.

These preliminary figures reveal a decrease in all continents in cane sugar production amounting to 4 % compared with last year and to 11 % compared

Production of Beet-sugar (raw).

COUNTRIES	PRODUCTION 1 SEPT. - 31 JAN.		TOTAL PRODUCTION DURING THE SEASON				
	1934-35	1933-34	1934-35 1)	1933-34	Average 1928-29 to 1932-33	% 1934-35	
						1933-34 = 100	Average = 100
	thousand cents	thousand cents	thousand cents	thousand cents			
Germany	36,256	30,660	36,338	31,508	40,038	115	91
Austria	4,921	3,758	4,982	3,758	3,111	133	160
Belgium	—	—	5,842	5,360	5,553	109	105
Bulgaria	2) 49	2) 855	50	916	763	5	7
Denmark	—	—	1,922	5,375	3,291	37	60
Spain	2) 4,548	2) 2,556	7,055	4,850	5,827	145	121
Irish Free State	1,627	685	1,653	778	455	213	364
Finland	254	145	254	161	83	158	306
France	2) 24,896	2) 20,031	25,772	20,787	21,715	124	119
Great Britain	14,417	11,139	14,440	11,156	6,842	129	211
Hungary	2) 2,638	2) 2,985	2,646	2,989	4,099	89	65
Italy	7,835	6,581	7,870	6,713	8,430	117	93
Latvia	2) 860	2) 643	1,058	714	229	148	462
Lithuania	—	—	335	178	283	188	121
Netherlands	2) 5,108	2) 6,099	5,203	6,129	5,556	85	94
Poland	2) 9,832	2) 7,552	9,850	7,560	14,759	130	67
Romania	2,565	3,419	2,568	3,554	2,447	72	105
Sweden	—	—	5,953	6,720	3,740	89	160
Switzerland	—	—	198	198	140	100	141
Czechoslovakia	13,951	11,258	13,999	11,371	20,650	123	68
Yugoslavia	—	—	1,367	1,642	2,324	83	59
<i>Total Europe a)</i>	—	—	149,425	132,417	150,335	113	99
U. S. S. R. 4)	—	—	31,000	24,250	26,552	128	117
<i>Total Europe b)</i>	—	—	180,425	156,667	176,887	115	102
Canada	—	—	1,418	1,493	1,027	95	138
United States	—	—	24,989	35,312	24,946	71	100
<i>Total North America</i>	—	—	26,407	36,805	25,973	72	102
Japan	—	—	764	564	570	136	134
Turkey in Asia	—	—	1,433	1,598	335	90	428
<i>Total Asia</i>	—	—	2,197	2,162	905	102	243
GENERAL TOTALS { a) . . .	—	—	178,029	171,384	177,213	104	100
{ b) . . .	—	—	209,029	195,634	203,765	107	103

a) Not including U. S. S. R. — b) Including U. S. S. R. — 1) Approximate data. — 2) Production to the end of December. — 3) Average 1931-32 to 1932-33. — 4) Sand sugar.

with the average. Decreases more than sufficient to absorb the increases in other producing countries occurred in the following countries: Puerto Rico in America, Java and the Philippines in Asia, and Mauritius in Africa. In Oceania a contraction in sugar manufacture took place in all three countries considered.

Total beet sugar production in the campaign 1934-35 is 13,400,000 centals (680,000 sh. tons) greater than that of last campaign and 5,260,000 (268,000) greater than the average. Increases have been made since the publication of the last *Crop Report* in the estimates of Spain, the Irish Free State, Finland, France, Great Britain, Italy, Latvia, Poland, Romania, Switzerland and Japan. By adding the estimates of cane sugar and those of beet sugar, it will be seen that total sugar production is almost the same as that of the 1933-34 campaign and 6 % smaller than the average of the five preceding campaigns.

* * *

U. S. S. R.: According to the Government plan the areas to be sown to sugar beet in 1935 have been fixed at 3,015,000 acres. The area actually cultivated in 1934 was 2,906,000 acres.

Indo-China: The crop in Annam, cutting of which was proceeding in the far north, promised to be good. The cane was good in appearance.

Sugar-beet.

COUNTRIES	AREA					PRODUCTION							
	1934	1933	Average 1928 to 1932	% 1934		1934	1933	Average 1928 to 1932	1934	1933	Average 1928 to 1932	% 1934	
				1933	Average							1933	Average
			= 100	= 100	= 100			= 100					
1,000 acres	1,000 centals					1,000 short tons					= 100	= 100	
Germany . .	881	751	1,010	117.2	87.2	229,157	189,133	246,633	11,458	9,457	12,332	121.2	92.9
Austria . .	123	115	90	106.7	136.6	29,573	23,534	19,348	1,479	1,177	967	125.7	152.8
Belgium . .	132	129	140	102.3	94.4	35,428	33,418	37,325	1,771	1,671	1,866	106.0	94.9
Bulgaria . .	4	30	41	14.7	10.8	443	6,527	5,417	22	326	271	6.8	8.2
Irish Free St.	46	15	13	302.3	363.2	10,847	4,519	2,792	542	226	140	240.0	388.4
Finland . .	7	7	5	105.1	142.2	2,227	1,256	838	111	63	42	177.3	265.8
France . .	679	675	658	100.5	103.2	184,088	164,486	158,188	9,204	8,224	7,909	111.9	116.4
*Engl. & W. .	396	364	248	108.9	159.7	...	73,449	46,129	...	3,372	2,305	...	...
Scotland . .	8	2	1	442.0	606.4	1,608	348	166	80	17	8	462.6	968.6
Hungary . .	111	108	156	103.1	70.9	20,127	20,817	27,871	1,006	1,041	1,394	96.7	72.2
Italy	221	202	266	109.5	83.1	58,466	47,258	60,858	2,923	2,363	3,043	123.7	96.1
*Latvia . . .	37	32	—	115.4	—	7,430	4,101	—	371	205	—	181.2	—
Lithuania . .	10	10	7	100.0	137.9	2,023	1,146	1,290	101	57	64	176.5	156.8
Netherlands.	104	117	126	88.3	82.0	30,424	42,953	39,900	1,520	2,148	1,995	70.8	76.3
*Poland . . .	279	245	456	113.9	61.1	...	40,836	86,995	...	2,042	4,350	...	...
*Romania . .	92	107	94	86.2	97.4	...	14,957	15,032	...	748	752	...	...
Sweden . . .	124	125	91	98.9	136.4	34,613	40,541	24,287	1,731	2,027	1,214	85.4	142.5
Switzerland.	4	4	3	95.7	117.2	1,543	1,444	964	77	72	48	106.9	160.2
Czechoslov.	393	358	523	109.7	75.1	93,495	64,232	123,719	4,675	3,212	6,186	145.6	75.6
*Yugoslavia .	2) 79	75	128	104.6	61.4	...	11,233	18,575	...	562	929	...	...
Total Europa	2,847	2,648	3,130	107.5	90.9	734,062	641,612	749,596	36,700	32,081	37,479	114.4	97.9
U. S. S. R. .	2,906	2,996	2,722	97.0	106.8	249,000	198,000	216,142	12,500	9,900	10,807	125.6	115.3
Total Europa	5,753	5,644	5,852	101.9	98.2	983,062	839,612	965,738	49,200	41,981	48,286	117.0	101.8
Canada . . .	52	46	49	113.0	106.5	8,260	9,140	8,920	413	457	446	90.4	92.6
U. S. A. . . .	789	983	717	80.3	110.0	152,540	220,600	162,352	7,627	11,030	8,118	69.1	94.0
Japan	25	22	23	111.4	108.1	4,524	4,122	4,158	226	206	208	109.7	108.8
Turkey . . .	136	57	24	237.6	557.9	9,581	7,672	2,367	479	384	118	124.9	404.8
TOTALS . . .	6,755	6,752	6,665	100.0	101.3	1,157,967	1,081,146	1,143,535	57,945	54,058	57,176	107.1	101.3

* Countries not included in the totals. — 1) Average 1930 to 1932. — 2) Unofficial figure.

Formosa: Growth of the cane planted from last summer is average, but that of the cane now being cut is fairly satisfactory. Harvesting has begun.

Japan: According to the most recent estimate area cultivated to sugarcane in 1934-35 will be about 31,200 acres against 24,300 in 1933-34 and 60,300 on the average of the five years ending 1932-33; percentages 128.5 and 51.7. The corresponding production is estimated at about 17,347,000 centals (867,300 short tons) against 12,272,000 (614,000) and 21,256,000 (1,063,000); percentages 141.4 and 81.6.

Egypt: The cutting of the early and general sugar-cane crop was started during the second ten days of January and the crop is being sent to the sugar factories which started work at the same time. The late cultivations are progressing towards complete maturity. It is expected that the unit yield will be 3 % above the average. Production of sugar at the end of January was estimated at 491,800 centals (24,600 short tons), compared with 301,400 (10,100) at the same time in 1934. 960,000 (48,000) in 1933 and 941,600 (47,100) in 1932.

Union of South Africa: Crop condition at the end of December averaged 10 % below normal. Good rains fell throughout the sugar belt and favourable weather prevailed.

THE INTERNATIONAL TRADE IN WINE IN 1933-34

During the past season some ameliorative factors operated on the international wine market but in most cases there was, on the contrary, further contraction in trade.

The most considerable element of depression was the diminution in the exports of France. This is the more notable in that the total Franco-Algerian supplies were normal at the beginning of the season (cf. *Crop Report*, January 1934, p. 30, table II). It is due in part to the measures taken by the Government to reduce imports of foreign wines and in part to the fall in internal prices on the French market (*ibid.*, p. 33, table III). The facilities previously accorded to the leading importing countries, consisting in the application of a reduced customs duty for a certain quota, were practically suppressed and the cost of production of foreign wines imported into France and bearing transport and customs charges, was for the greater part of the time equivalent to and often above that of French wines on consuming markets.

These two elements – the restrictions on imports and the fall of prices on the internal market – appear in fact to be the consequences of a crisis of over-production that has become endemic. This is clearly proved by the reduction in volume of Algerian and Tunisian wines introduced into France, which are almost entirely free of duty.

Whatever may be the effect of the measures taken by the French Government to counter the viticultural crisis and whatever may be the fluctuations of Franco-Algerian production, it would seem clear that the latter is now sufficient to cover all internal requirements and that France has ceased for several years, apart from the influence of external factors, to be the leading import market.

Imports of wine.

Countries	1933-34	1932-33	1931-32	1930-31	1929-30	1928-29	1927-28	Average 1927-28/ 1931-32
(Thousand Imperial gallons)								

1. — Into the principal importing countries for the season 1 October-30 September.

a) France:								
from Algeria and Tunisia	(264,169)	(365,775)	(259,307)	(269,294)	(238,079)	(223,803)	(160,032)	(230,103)
from foreign countries .	15,068	48,658	19,974	94,457	33,392	63,947	90,058	60,366
(preceding crop)	(1,138,725)	(1,090,419)	(1,305,137)	(1,003,924)	(1,430,193)	(1,326,914)	(1,126,495)	(1,238,533)
b) Other European and Mediterranean producing countries.								
Switzerland	26,529	27,650	25,517	25,759	24,857	27,651	26,837	26,124
Germany	18,281	13,045	14,254	14,342	17,224	24,043	26,727	19,318
Czechoslovakia	1,672	1,870	2,574	4,180	6,027	6,401	6,995	5,235
Austria	1,100	1,628	4,729	6,907	9,041	9,217	11,395	8,258
French Morocco	990	2,068	3,894	5,917	5,477	4,597	3,982	4,774
Total 1)	48,232	46,261	50,968	57,105	62,626	71,909	75,936	63,709
(preceding crop)	(78,597)	(86,362)	(114,849)	(110,142)	(78,487)	(81,963)	(47,163)	(86,521)
c) European and Mediterranean non producing countries:								
United Kingdom 2):								
from foreign countries.	10,253	9,491	9,184	11,165	11,645	12,442	12,228	11,333
from Empire countries	4,181	4,382	4,171	3,012	2,607	2,283	3,054	3,025
Belgium	5,917	6,929	6,291	8,337	9,195	9,635	8,975	8,429
Netherlands	1,826	1,738	2,574	4,179	6,027	6,401	7,017	5,240
Sweden, Denmark, Norway, Poland	3,124	2,794	3,366	4,224	4,553	4,421	4,224	4,158
Egypt	792	1,892	2,156	2,508	3,806	4,092	3,564	3,225
Total 3)	26,093	27,226	27,742	33,425	37,833	39,274	39,062	35,410
GENERAL TOTAL 4) . . .	89,393	122,145	98,684	184,987	133,851	175,130	205,056	159,485

Countries	1934	1933	1932	1931	1930	1929	1928	Average 1928-32
(Tousand Imperial gallons)								

2. — Into other extra-European importing countries by continent and calendar year 5).

North America . . . . .	...	3,322	2,552	3,168	3,366	5,103	5,455	3,929
South America . . . . .	...	2,640	2,354	3,960	7,281	9,569	10,647	6,762
Asia . . . . .	...	3,212	3,410	3,278	3,872	4,949	4,707	4,043
Africa, not including Egypt and French Morocco . .	...	9,657	10,207	9,591	11,131	11,109	10,361	10,480
Oceania . . . . .	...	506	440	550	704	748	638	616
Total . . . . .	...	19,337	18,963	20,547	26,354	31,478	31,808	25,830

1) Representing on the average 94% of the total import of all the European and Mediterranean wine producing countries. — 2) Quantities imported total; quantities reexported are about 400-600 thousand gal. — 3) Representing on the average other 97.5% of the total import of all the non-producing European and Mediterranean countries. — 4) Representing 84% to 89 % (86 % on the average) of the total world import. — 5) Net imports.

The 1932-33 season would appear from the point of view of international trade to have been an isolated incident in the movement toward stabilization, an incident that may be repeated but on a smaller scale.

The number of deficitary wine-producing countries has slightly increased with respect to the last season the volume of its imports, which remains smaller than in any season prior to 1932-33.

This slight increase or, more precisely, check in a reduction that has been practically continuous since 1927-28 is due exclusively to the very great increase in German imports. The latter increase may be explained in part by the fact that the two previous crops were relatively small and practically exhausted the stocks existing in the country but they seem due especially to a growth in the subsidiary viticultural industries of distilling, vinegar and vermouth manufacture. In fact, of a total increase of 5,236 thousand Imperial gallons (6,288 thousand American gallons), the wines destined for current consumption make up only 1,105 thousand Imperial gallons (1,328 thousand American gallons) or about 12 %, though the increase in wine imports for distilling was 1,269 (1,524) thousand gallons or 67 %, that in wines for vinegar 128 (153) thousand gallons or 20 % and that in wines for vermouth and other *apéritifs* 2,734 (3,283) thousand or over 115 %.

The increase in apparent consumption of wine as such (production + imports — exports) is thus about 2.4 (2.9) million gallons smaller if the quantities imported for industrial use are subtracted; such an increase has no very precise meaning since it is relatively insignificant (scarcely 5.5 %) and perhaps not in fact determined by any recovery of real consumption, which appears to have become stable about the rather low level attained in the two preceding seasons, 42 (50) million, not taking account of the wines imported for distilling, vinegar and vermouth.

If, on the other hand, the position of the various suppliers of Germany is considered, it appears that the country whose exports show the most substantial increase is Italy as a producer of vermouths. This country now occupies the first place among the suppliers of the Reich [3.6 (4.3) million in 1932-33, 7.5 (9.0) in 1933-34]. Greece and Hungary have also nearly doubled the quantities supplied, though these are comparatively small in amount. Spain, which previously was by far the chief source, Portugal and Chile have benefited from a slight increase, while France, Yugoslavia and the U. S. S. R. supplied considerably less.

All the other viticultural countries which do not produce sufficient for their needs have reduced their imports, though the preceding vintage in these countries was relatively small. The total apparent consumption of Switzerland, Austria and Czechoslovakia in the year 1933-34 at 74 (89) million is about 43 (52) million lower than the highest figure recorded in 1931-32 and also 10 % smaller than the average of the five-year period previous to 1931-32, notwithstanding the expansion in production. Domestic consumption in Morocco, however, is increasing uniformly and the relatively substantial fall in imports is due to the growth in production which will result in the closing of the Moroccan market to the international wine trade after a very short time.

The Swiss market during the course of the last year provided an appreciably larger outlet for Spanish wines but less was taken from Italy. The decrease in Austrian imports affected all the chief suppliers of this country, Hungary and Switzerland in particular, which have experienced a fall of more than one half in their sales. Italy maintained its position better, and its share of Austrian imports of wine rose from 59 to 71 %. In Czechoslovakia also, an appreciable increase was to be seen in imports from Italy and Hungary which are tending to supplant the traditional suppliers of this country, namely, Yugoslavia, Spain, Greece, and France.

A further decline in domestic consumption occurred in the total of the non-producing countries owing to the considerable decrease returned by Belgium and, in particular, Egypt.

Egypt is another country the international wine market of which is steadily closing. The fall in consumption in Belgium seems to be less marked than the change in imports would suggest, the expansion in the latter in the preceding season having probably served to replenish stocks. It is, nevertheless, quite evident. It should be observed that it chiefly affected high quality bottled wines, sparkling and other kinds, ordinary wines in casks and French wines generally, imports of which fell by more than a third. On the other hand, wines in casks having an appellation of origin revealed only a very slight fall, and an increase is noticeable on the whole in Greece's share, which exports almost exclusively this type of wine, and in that of Spain, which accordingly takes first place on the Belgian market with France following.

On the other hand, an expansion is shown in the non-producing countries of Northern and Eastern Europe which are for the most part consumers of beer.

The increase in imports into Great Britain follows that observed at the end of the preceding year which is thus strengthened. Surprisingly enough, the increase in wines from within the Empire halted for the first time since 1928-29, and a slight fall is noticeable in imports from Australia, while those of the European suppliers of the British market revealed a small increase. Imports from Italy in particular increased by 15 %. The only exception was Spain which, though increasing its shipments of red wines but supplying appreciably less white wine, remains in the same position. The decrease in imports from Empire countries, however, is for the most part the outcome of the large volume of stocks accumulated during former years and does not appear to indicate a disinclination to take these wines. The increase is, on the whole, particularly noticeable in the case of bottled wines, especially sparkling types, imports of which increased by 25 %.

It is to be observed that with the changes made in British trade statistics, it is necessary to consider general imports and not the quantities absorbed by domestic consumption as hitherto. Though the absolute differences between these two series are not insignificant, the general trend is the same in both, as will be seen by comparing the present series with that appearing in the *Crop Report* of March 1934 (Table I, p. 193) for the years previous to 1933-34.

With the exception of Norway, all the other importing countries considered, *i. e.*, the Netherlands, Denmark, Sweden and Poland, have increased their wine

imports in proportions varying from 4 % in the Netherlands to 28 % in Denmark. Norway imported 15 % less.

Figures for non-European countries, with the exception of Egypt and Morocco, owing to the absence of statistics, do not cover the year 1934 and are merely given to provide some indication. However, it is possible to observe the decrease in imports of Asia and Africa. The slight increase in the imports of South America benefited only the viticultural countries of the southern hemisphere.

The year 1933, however, shows the first appreciable expansion in the imports of North America owing to the re-opening of the United States market. The movement was again to be observed in 1934, and to obtain an idea of the growth, it is only necessary to remember that the shipments to the United States from the three chief European exporting countries, Spain, France and Italy grew from 396 (476) thousand gallons in 1932-33 to 2.6 (3.1) million in 1933-34. But this regional increase is hardly capable of bringing the total imports of the non European importing countries up to the average level of the period 1928 to 1932, and they fall very far short of the level of the years 1928 to 1929.

Exports show a total reduction of nearly 23 (27) million gallons, or more than 17 % from those of the preceding year, and more than about 67.4 (80.9) million, or 35 %, from the average of the preceding five years.

This decline is appreciably smaller than that which would appear from a superficial examination of the statistics of imports, but, in addition to the usual differences existing between these two series arising for reasons well known in the customs returns, it is necessary to take account of the increase in quantities entering the United States but not shown in the general table of imports drawn up for 1933 for non-European countries.

Apart from this total reduction, the fact which emerges most clearly from the table is the inverse movements in the exports to France, which fell considerably, and in those for other countries which show an appreciable increase of nearly 16 %. Portugal and Yugoslavia only show a further reduction in their foreign trade. This phenomenon is particularly clear in the case of the second of these two countries, shipments from which, after having reached a considerable amount, were reduced to an almost insignificant total.

A study of the situation of the chief exporting countries indicates that, at least in the case Italy, Greece, Hungary, and Spain, the chief, if not in many cases, the only factor leading to an increase in their shipments abroad is the expansion of the German and the United States market. Thus, the statistics of Spain, which, however, are not in agreement with German statistics, show an increase of 90 % in this country's exports to Germany compared with the two preceding years. In the case of Italy, the increase is 72 %. In the case of Greece and Hungary it is of the same magnitude. In 1933-34, France exported 1 (1.2) million gallons to the United States, compared with 62 (74) thousand in 1932-33, Italy 1.2 (1.5) million compared with 244 (293) thousand, and Spain nearly 350 (420) thousand, compared with 90 (108) thousand gallons.

Further, in Spain, there was an increase of 1,844 (2,214) thousand gallons, or 22 %, in exports to Switzerland, and a slight fall of 267 (320) thousand in exports to England, while, *vis-à-vis* the other purchasers, Belgium and the Netherlands,

the situation of Spain is practically unchanged. Total exports of Spain to countries other than France are greater by 10 % than those of the preceding year. As regards the substantial decline in the trade in ordinary wines and *mistelles*, the principal market for which is France, it is necessary to observe the appreciable growth of nearly 17 % in that of special wines of Malaga and Sherry types. As a result of this increase, the decline in value occasioned by a decrease of 40 % in volume is reduced to one of 25 % compared with the preceding year. The value of exports is only slightly smaller than that of 1931-32.

Apart from the German and North American markets, Italian trade has improved on the markets in the Danube basin, those of Austria and Czechoslovakia, and on those of Great Britain and the Northern European countries. Though, on the other hand, there was a reduction of 9 % in the exports to Switzerland, which alone absorbs about half the Italian wine exports, and a more or less appreciable decline in those to France and South American countries, Brazil and Argentina, these decreases still leave a considerable increase on balance amounting to 32 % compared with the preceding year and the total exports from Italy approximate fairly closely to the average of the five years previous to 1932-33.

Greece has increased its exports, not only to Germany but also to Belgium and Malta, while shipments to Italy are considerably smaller. Hungarian exports to countries other than Germany were smaller, on the whole, than those of the preceding year, exports to Czechoslovakia having increased and those to Switzerland and Austria having declined.

Portuguese exports to European countries other than France have increased on balance, there having been an increase in exports of Madeira and Port wines to England, Germany and to the countries of Northern Europe. Shipments of ordinary wines to Portuguese colonies, on the other hand, showed a considerable contraction. On the whole, exports to Latin America and Brazil have also fallen. Hence the slight fall in Portuguese trade *vis-à-vis* countries other than France. The total decline in Portuguese exports is 14 %.

The recovery in French exports was largely the outcome of the fall in prices on the internal markets and of governmental measures. This is fairly evenly distributed with respect to most of the purchasers of French wines, with the exception of Belgium, the Scandinavian countries and the colonies, but it is comparatively substantial so far as Great Britain (nearly 13 %) and the United States—979 (1,176) thousand gallons in 1933-34 against 62 (74) thousand in 1932-33—are concerned. The most important fact for French trade is the very great relative increase in exports of fine wines in bottle, from Champagne, the Gironde and elsewhere, as well as of liqueurs and *mistelles*; for these wines as a whole the increase is 55 % with respect to the last season and 13 % with respect to 1931-32 but their export volume is 13 % less than in 1930-31. Besides, though the export of wine in cask from the Gironde and elsewhere has undergone a further contraction, the latter is much smaller than in previous years.

The increase in German exports is due to the development of sales on the British market, which is by far the most important for Germany, and in the United States; for other destinations there is a diminution.

Exports of wine by principal exporting countries.

Countries	1933-34	1932-33	1931-32	1930-31	1929-30	1928-29	1927-28	Average 1927-28/ 1931-32
(Thousand Imperial gallons)								
<i>Season 1 October-30 September.</i>								
NORTHERN HEMISPHERE.								
Spain:								
to France 1)	6,709	32,600	11,945	63,793	21,888	48,989	74,110	44,145
to other countries . . .	29,301	26,705	28,135	30,973	44,281	46,833	45,007	39,046
Italy:								
to France	286	682	616	20,546	1,188	550	418	4,664
to other countries . . .	23,933	19,336	17,114	18,192	19,380	20,436	20,920	19,208
Portugal:								
to France 1)	1,342	3,102	3,652	2,640	2,530	3,630	15,134	5,517
to other countries . . .	14,320	14,716	10,405	15,904	12,517	17,180	18,104	14,822
Greece:								
to France 3)	4,531	11,395	3,124	6,247	9,459	10,889	5,939	7,132
to other countries . . .	6,423	5,917	4,422	6,379	10,867	21,228	15,332	11,646
France	17,686	13,968	16,498	19,182	25,671	30,423	30,071	24,369
Hungary	5,103	5,037	4,641	7,193	6,819	5,455	1,848	5,191
Germany	1,166	924	1,034	1,166	1,144	880	880	1,021
Yugoslavia 4)	462	836	3,740	4,290	1,144	1,320	1,716	2,442
Algeria-Tunisia:								
to foreign countries . .	...	1,870	1,782	1,914	2,486	2,640	4,070	2,578
to France . . . . .	...	(374,618)	(279,413)	(297,539)	(234,714)	(224,947)	(159,812)	(239,285)
Total:								
a) not including above exports to France . . .	100,000	89,309	87,771	105,193	124,309	146,395	137,948	120,323
b) including above ex- ports to France 5) . . .	113,000	137,088	107,108	198,419	159,374	210,453	233,549	181,781
Total production of above countries not including France	(1,954,812)	(2,270,719)	(1,974,478)	(1,879,097)	(2,052,041)	(2,145,509)	(1,933,695)	(1,996,964)
Proportion of this produc- tion represented by ex- ports a)	5.2 %	3.9 %	4.4 %	5.6 %	6.1 %	6.8 %	7.1 %	6.0 %
Total production including France	(3,093,537)	(3,361,138)	(3,279,615)	(2,883,021)	(3,482,234)	(3,472,423)	(3,060,189)	(3,235,496)
Proportion of this produc- tion represented by ex- ports b)	3.7 %	4.1 %	3.3 %	6.9 %	4.6 %	6.1 %	7.6 %	5.7 %
<i>Season 1 July-30 June.</i>								
SOUTHERN HEMISPHERE.								
Australia	3,113	3,093	3,476	2,200	2,178	1,738	3,762	2,671
Chile	1,518	1,408	1,210	836	990	—	—	—
Union of South Africa . .	1,298	1,056	792	770	616	462	—	—
Total 6)	5,929	5,557	5,478	3,806	3,784	3,300	5,170	4,268
Total production of these three countries	(102,135)	(84,603)	(80,885)	(102,971)	(105,192)	(109,438)	(101,167)	(99,931)
Proportion exported . . .	5.8 %	6.6 %	6.8 %	3.7 %	3.6 %	3.0 %	5.1 %	4.4 %
Proportion of world total exported	3.3 %	3.7 %	3.0 %	5.9 %	4.1 %	5.3 %	6.9 %	5.0 %

1) Imports into France; the total exports correspond, however, to the data given in the official statistics. —
 2) Calendar years 1927, 1928 and 1929. — 3) Including exports of must. — 4) Season 1 July-30 June. —
 5) About 99 % of the exports of the northern hemisphere. — 6) About 97 % of the exports of the southern hemisphere.

METHODOLOGICAL NOTES ON TABLE 2

(1) The statistics of Spain do not give any indication of destination for monthly exports previous to 1931. Part of the subsequent figures given as exports to France refer to transit trade for Switzerland, as will be seen from the following table, giving details for the last four seasons

	1933-34	1932-33	1931-32	1930-31	1933-34	1932-33	1931-32	1930-31
	(Thousand Imperial gallons)				(Thousand American gallons)			
<i>Spanish statistics :</i>								
Exports to France	7,052	35,988	17,576	68,302	8,469	43,218	21,107	82,025
Exports to Switzerland	10,333	5,345	3,696	4,114	12,405	6,419	4,438	4,940
<i>Total</i>	<i>17,385</i>	<i>41,333</i>	<i>21,272</i>	<i>72,416</i>	<i>20,874</i>	<i>49,637</i>	<i>25,545</i>	<i>86,965</i>
<i>French statistics :</i>								
Imports from Spain	6,720	32,600	11,945	63,793	8,070	39,150	14,314	76,610
<i>Swiss statistics :</i>								
Imports from Spain	10,687	8,843	9,613	8,975	12,834	10,620	11,544	10,778
<i>Total</i>	<i>17,407</i>	<i>41,443</i>	<i>21,558</i>	<i>72,768</i>	<i>20,904</i>	<i>49,770</i>	<i>25,888</i>	<i>87,388</i>

For this reason, it is preferable to take the French figures (which have actually been used) if we wish to obtain a more precise idea of the volume of Spanish wines actually exported, for consumption, in France.

(2) The same basis has been adopted for similar reasons in the case of Portugal. The annual statistics of exports from Portugal correspond more or less to the French figures for imports. On the other hand, French monthly statistics do not give any figures for imports of ordinary wines from Portugal, but since 1930 such imports, have dwindled to next to nothing; an approximate figure has been given for the 1929-30 season.

(3) No monthly statistics are available for Portugal previous to 1929.

(4) No details of exports of must to France are given in the Greek statistics previous to 1930. However, the total figure of must exported in the preceding years "to other countries" (i. e., other than Italy and the U. K.) can be taken as representing fairly accurately little more than the volume exported to France; during the 1930-31 season 1,038.3 thousand Imperial gallons (1,246.9 thousand American gallons) were exported to France and 11.0 thousand Imperial gallons (13.2 thousand American gallons "to other countries" (not including Italy and the U. K.); during the seasons preceding 1929-30, exports of must "to other countries", including France, were of little importance [83.6 thousand Imperial gallons (100.4 thousand American gallons) in 1926-27, nothing in 1927-28, 217.8 thousand Imperial gallons (261.5 thousand American gallons) in 1928-29].

(5) Yugoslav statistics have only provided half-yearly figures since 1930. However, as the volume of exports for the twelve months ending 30 June is practically the same as the volume of exports during the season 1 October-30 September, it is possible to use the first set of figures with a considerable degree of accuracy.

(6) Some of the totals have been rounded in order to compensate for slight errors which might arise owing to the approximate nature of the figures mentioned above.

(7) As production figures for the southern hemisphere are those of the vintage preceding the commercial season, they refer to the 1926-1932 vintages (1926-27 to 1932-33 agricultural seasons). Thus the percentages given for the proportion of world vintage exported correspond to the production of the calendar year harvested in March-April in the southern hemisphere, and in September-October of the same year in the northern hemisphere.

The increase in exports from Australia, Chile and South Africa indicates distinctly that these three countries are becoming the principal suppliers of the southern hemisphere and are there gradually ousting the European countries; this is particularly evident in the cases of Australia and South Africa, from which the shipments to the United Kingdom have declined, especially in the case of the former. The reopening of the United States market is also not unconnected with the increased trade of these countries.

After this analysis of the various factors that have influenced the international trade it is interesting to determine the possibilities during the 1934-35 season. As has been seen, these factors are on the one hand, the partial closing of the French market and the decrease in consumption in the importing wine-producing countries as a whole and, on the other hand, the reopening of the United States market and enlarging of the German market, which appears to be connected with a new orientation of the wine trade of that country, and slight recovery in apparent consumption in the majority of non-producing countries.

On the whole, however, these opposing factors seem to be acting in the sense of a further contraction in international trade. Everything leads to the expectation that the restrictions in France will be strengthened; on the other hand it does not appear that a growth of United States imports can be counted on while it is to be expected that the German market, which is abundantly provided for, will somewhat reduce its foreign purchases; finally, there are no grounds for expecting an increase in consumption in the deficitary producing countries while the slight recovery experienced in the other countries would seem likely to fall off, the increase in apparent consumption having corresponded in part to a reconstitution of previous stocks.

To these factors, of which the influence is directly felt on the trade movement, must be added those depending on the volume of production in importing producing countries. The analysis made in the January *Crop Report* leads to the conclusion that, though France, Switzerland and Germany must normally reduce their foreign purchases in consequence of a very large crop, Austria and Czechoslovakia must rather increase them, as must also Italy, where supplies are very much below normal requirements for consumption. On the other hand, the very low prices on the Spanish, Portuguese, Italian, French, Algerian and Greek home markets should favour exports from these countries.

Taking all these factors into account, it would seem that the current season, 1934-35, will be characterized by a smaller import movement into the producing countries and a further increase of imports into the non-producing countries. In fact, confining attention to the five leading importers, the opening of the current season has been marked, in comparison with the corresponding period of 1933-34, by a large increase in imports into the United Kingdom and Belgium, by a reduction by more than half in the imports of foreign wines into France and a smaller but appreciable reduction in those of Switzerland and Germany.

Given the extent of this contraction of French imports, it seems that the 1934-1935 season will be characterized rather by a fresh contraction in the international trade in wine.

P. DE VIGUERIE.

VINES

Austria: Lignification is generally satisfactory. Frosts have not caused very serious damage. On 1 February crop condition was 1.8 against 1.5 on 1 January of this year and 2.1 on 1 February 1934.

France: Weather was in general favourable to growth and to cultivation and pruning. Growth at the end of January appeared to be too forward in some instances. The very severe cold which prevailed at the end of January caused a halt. The condition of vines on 10 February was good.

Vines.

COUNTRIES	AREA					PRODUCTION OF WINE							
	1934	1933	Average 1928 to 1932	% 1934		1934	1933	Average 1928 to 1932	1934	1933	Average 1928 to 1932	% 1934	
				1933	Average = 100							1933	Average = 100
1,000 acres					1,000 Imperial gallons			1,000 Amer. gallons					
Germany 1) 2)	180	178	177	101.5	101.8	99,429	39,563	50,362	119,405	47,512	60,480	251.3	197.4
Austria 2)	67	64	75	103.6	89.3	17,356	20,456	22,055	20,843	24,566	26,486	84.8	78.7
Bulgaria 1) 2)	225	217	193	103.6	116.4	67,067	52,539	40,903	80,541	63,095	49,121	127.7	164.0
Spain 1) 2)	...	...	3,314	...	...	449,624	434,754	464,465	539,958	522,100	557,781	103.4	96.8
France 2) 3)	3,654	3,514	3,504	104.0	104.3	1,652,976	1,093,077	1,180,915	1,985,075	1,312,688	1,418,173	151.2	140.0
Greece 1) 2).	371	352	307	105.4	120.7	78,122	85,053	59,793	93,817	102,141	71,806	91.9	130.7
Hungary 1)	519	520	533	99.8	97.5	55,690	67,828	75,013	66,878	81,455	90,084	82.1	74.2
Italy 1) 2)	2,446	2,435	2,171	100.4	112.7	672,008	726,682	906,076	807,021	872,679	1,088,116	92.5	74.2
Italy 1) 2)	7,282	7,291	8,116	99.9	89.7	...	...	...	...	...	...	...	...
Luxemb. 1) 2)	3	3	3	100.0	82.4	3,080	1,246	1,337	3,698	1,497	1,606	247.1	230.3
Romania 2)	675	675	609	100.0	110.8	178,180	165,289	163,319	213,978	198,497	196,132	107.8	109.1
Switzerland.	33	33	32	100.0	101.7	17,158	5,279	12,493	20,605	6,340	15,003	325.0	137.3
Czechoslov.	52	49	44	106.1	117.4	4,466	7,428	8,408	5,363	8,920	10,097	60.1	53.1
Total Eur. §)	18,821	18,645	19,078	100.9	98.7	3,219,855	2,631,096	2,915,952	3,866,752	3,159,710	3,501,797	122.4	110.4
* Syria & Leb.	129	122	121	105.5	106.7	—	—	—	—	—	—	—	—
Algeria 2).	958	922	683	103.9	140.2	484,887	368,040	327,376	582,306	441,983	393,150	131.7	148.1
French Morocco 2) 4)	36	24	15	152.1	242.8	12,759	9,833	4,913	15,322	11,808	5,900	129.8	259.7
Tunis . . .	135	125	99	107.9	136.9	37,396	31,237	23,910	44,909	37,512	28,714	119.7	156.5
Total Africa	1,129	1,071	797	105.5	141.8	535,042	409,110	356,199	642,537	491,303	427,764	130.8	150.2
GR. TOTAL §)	19,950	19,716	19,875	101.2	100.4	3,754,711	3,040,206	3,272,151	4,509,289	3,651,013	3,929,561	123.5	114.7

*) Countries not included in the totals. — §) In calculating the totals account has been taken of the probable area cultivated in some countries for which estimates of production are available but not those of area. — For the totals, the figures of must production are converted into their equivalent of wine, according to a coefficient of 9/10.

u) Unmixed crop. — m) Mixed crop. — s) Areas and productions declared to the tax-offices. In preceding years the undeclared area was about 270,000 acres and the undeclared production was about 50,000 Imp. gal. or 60,000 Am. gal. — 1) Production of must. — 2) Area bearing. — 3) Provisional approximate date. — 4) Including the quantity obtained from native vines grown on trellis (in 1933, 990,000 Imperial gallons or 1,200,000 American gallons).

Italy: Vineyard operations proceeded generally in good conditions. Planting and replacing of old vines seemed to be going on fairly actively. At the beginning of February severe cold and frost slowed down all work and it was feared that damage was caused in the more exposed vineyards in the north.

United States: According to the most recent estimate total production of grape this year was 35,593,000 centals (1,775,000) short tons against 38,192,000 (1,910,000) in 1933 and 44,061,000 (2,203,000) on the average of the five years ending 1932; percentages 93.0 and 80.6.

Syria and Lebanon: The total vine area is 126,800 acres, of which 108,200 are in bearing, against 122,400 to in 1933 and 121,000 on the average of 1928-32; 103.6 % and 104.7 %. Total production of grapes is estimated at 4,708,600 centals against 1,700,500 in 1933 and the 1928-32 average of 3,031,000; 276.9 % and 155.4 %. About 80 % of the crop is in Syria which is followed in order of importance by Lebanon, Latakia and Jebel ed Druz, the last having only 2,000 acres and 26,400 centals. The grapes of Jebel ed Druz are of very good quality; about a quarter of the crop is reserved for preserving or drying. No wine is made but this year two Europeans at Es Suweida have made a trial on a small scale. Total production of raisins in the four States was about 132,300 centals in 1934 and production of wine was about 770,000 (925,000) gallons, of which 60 % were in Syria, which formerly had no production.

Algeria: Work in the vineyards - cultivation and pruning - was retarded in the Province of Constantine by excessive wet. Work in Oran was impeded by the dry weather, but after the snow which fell at the end of January they were resumed. The situation in Ager was very satisfactory and pruning was almost completed by the beginning of February. A system of hoar frost warnings was introduced recently by the Government.

French Morocco: The following table gives the figures of the production of grapes and raisins for 1934, 1933 and those for precedent years; these ones are calculated according to statistic dates, which were made on an other criterium.

	1934	1933	Average 1928-1932	Percentage 1933 = 100	Percentage Average = 100
	(000 centals)				
Grapes for wine	1,664	1,290	683	129.1	243.5
Table grapes	595	705	584	84.4	101.9
Grapes for raisins	287	132	287	216.7	100.0
<i>Total of fresh grapes</i>	<i>2,546</i>	<i>2,127</i>	<i>1,554</i>	<i>119.7</i>	<i>163.8</i>
Raisins	84	40	86	221.1	97.4

Pruning was finished at the end of January and the work of clearing the roots was begun.

A *dahir* of the Moroccan Government dated 3 January 1935 prohibits vine plantings up to October 1937 in order to prevent overproduction of wine. Domestic consumption in Morocco was estimated at about 6.6 million Imperial gallons (7.9 million American gallons) and as it is unlikely to expand at a rapid rate, the normal production of Morocco is at present double the consumption.

OLIVES

Algeria: Cold and snow have caused rather considerable damage to olive trees.

Olive picking, which was practically completed in the west at the end of January, was proceeding in the central areas and was in full swing also in the east.

In Oran, production was thought to be 25 to 30 % greater than that of last year. The quality of oil appears to be fairly good, damage from *dacus* being limited in extent. Picking in Algiers in the central region was slowed down by rain in some of the higher districts. The percentage of rotten olives and the acidity of the oil are higher. The yield of oil at 110-120 lb. (14-16 American gallons) per 1000 lb. of olives was slightly below normal for this time of the year. Picking in the east in Constantine, which should

Olive and Olive-oil Production.

COUNTRIES	AREA						BRITISH MEASURES			AMERICAN MEASURES			% 1934/35		
	1934/35	1933/34	Aver. 1928/29 to 1932/33	% 1934/35		1934/35	1933/34	Aver. 1928/29 to 1932/33	1934/35	1933/34	Average 1928/29 to 1932/33	1933/ 1934	Aver- age		
				1933/ 1934 = 100	Aver. = 100									1933/ 1934 = 100	Aver- age = 100
Thousand acres						Thousand centals			Thousand s) pounds t) Amer. gallons						
Spain . .	...	4,698	4,585	...	...	s) 26,811	36,314	37,800	2,681,149	3,631,358	3,780,002	73.8	70.9
France . .	—	—	—	—	—	t) 5,031	6,838	7,348	66,109	89,856	96,551	73.6	68.5		
Greece 1).	—	—	—	—	—	s) 1,295	589	877	129,522	58,875	87,737	220.0	147.6		
*Italy { a)	1,991	1,991	1,667	100.0	119.5	s) 617	540	783	61,730	53,982	78,324	114.4	78.8		
{ b)	3,146	3,145	3,781	100.1	83.2	t) 2,425	2,323	2,270	31,867	30,521	29,833	104.4	106.8		
Portugal .	—	—	—	—	—	s) 28,479	25,843	29,214	2,847,937	2,584,344	2,921,439	110.2	97.5		
—	—	—	—	—	—	t) ...	3,611	4,734	...	47,450	62,206	...	...
Syria and Lebanon	194	192	187	101.1	103.6	t) 536	1,652	982	7,040	21,711	12,903	32.4	54.6		
—	—	—	—	—	—	s) 1,446	1,092	1,274	109,791	109,194	127,438	132.4	113.5		
Algeria . .	...	168 2)	200	...	...	t) 212	349	239	2,781	4,584	3,140	60.7	88.6
French Ma- rocco . .	—	—	—	—	—	s) (3) 292	3) 214	3) 276	3) 29,211	3) 21,366	3) 27,650	136.7	105.6		
Tunis . .	—	—	—	—	—	t) (2) 756	4) 1,587	4) 3,417	4) 275,579	4) 158,678	4) 341,713	173.7	80.6		
TOTALS . .	—	—	—	—	—	t) 303	183	442	3,980	2,408	5,804	165.3	68.6		
	—	—	—	—	—	s) 1,653	1,080	1,385	165,347	108,027	138,541	153.1	119.3		
	—	—	—	—	—	t) 254	161	242	3,332	2,115	3,175	157.5	104.9		
	—	—	—	—	—	s) 1,323	1,323	955	17,382	17,382	12,544	100.0	138.6		
	—	—	—	—	—	t) 10,084	12,829	12,478	132,491	168,577	163,950	87.6	80.3		

*) Country not included in the totals. — a) Pure crop. — b) Mixed crop. — s) Olives. — t) Oil. — 1) Olive production refers to table olives. — 2) Year 1932-33. — 3) Olives for preserving. — 4) Olives for oil.

have been finished early was impeded by the bad weather, which, moreover, caused considerable loss in the olives not yet picked, while the last olives to be picked showed high acidity. On the whole, however, well formed olives yielded satisfactorily in the oil presses, but the oil produced often lacks delicacy.

There is no reason at present for modifying the provisional estimate given in the table above.

COTTON

U. S. S. R.: According to the Government plan the areas to be sown to cotton in 1935 have been fixed at 4,799,000 acres. The area actually cultivated in 1934 was 4,764,000 acres.

United States: Cotton ginned to specified dates and throughout the season. Quantities are given in running bales, except that round bales are counted as half bales. Linters are not included.

Cotton ginned to	Cotton seasons				
	1934-35	1933-34	1932-33	1931-32	1930-31
1 August	99,787	171,254	71,163	7,307	78,188
16 August	353,888	459,528	251,451	90,608	572,810
1 September	1,397,886	1,396,139	865,160	565,753	1,879,919
16 September	3,130,797	3,102,121	2,645,574	2,092,758	3,736,120
1 October	4,958,346	5,908,071	4,835,990	5,409,657	6,303,895
18 October	6,748,223	8,608,090	7,309,094	9,496,965	9,254,968
1 November	7,920,231	10,355,031	9,247,045	12,124,295	10,863,896
14 November	8,632,991	11,248,200	10,533,684	14,207,613	11,962,827
1 December	9,029,792	12,106,377	11,635,089	15,018,403	12,837,099
13 December	9,174,241	12,356,276	12,081,404	15,354,212	13,259,413
16 January	9,380,348	12,556,729	12,414,899	15,996,382	13,594,388
<i>Total ginned</i> <i>(1 March).</i> . . . .	...	12,664,019	12,709,647	16,628,874	13,755,518
Equivalent 478 lb. bales. . . . .	...	13,047,262	13,001,508	17,095,594	13,931,597
Average gross weight in lb. of bale count- ing round as half bales. . . . .	...	515.1 lb.	511.5 lb.	514.0 lb.	506.4 lb.

Haiti: Picking of the new crop, which is expected to be very large, was in progress in January.

India: The following are the latest estimates of area and production in the Punjab and Madras.

	1934-35	1933-34	Average 1928-29 to 1932-33	% 1934-35 1933-34 = 100	Average = 100
<i>Area (ooo acres).</i>					
Punjab	2,878	3,016	2,529	95.4	113.8
Madras	2,135	2,044	2,214	104.4	96.5
<i>Production.</i>					
Punjab (ooo cent.)	3,548	3,464	2,639		
(ooo bales)	742	725	552	102.4	134.4
Madras (ooo cent.)	1,782	1,800	1,839		
(ooo bales)	373	377	385	99.0	96.9

Indo-China: Preparatory work in the fields was continuing in the north of Annam at the end of December. Sowings had been completed in the central areas; sprouting was fairly good. Picking was proceeding normally in the south. The cotton fields in Cambodia showed normal development as a result of the December rains.

French West Africa: A serious effort is being made in the Soudan, which is the most important producing area of the group, to extend cultivation of the Allen variety.

Egypt: Cotton ginned up to the end of January in bales of 478 lb. net weight:

	1935	1934	1933	1932	1931	1930	1929
Sakellaridis	145,670	186,800	189,300	191,760	270,330	375,290	412,670
Other varieties above:							
1 3/8"	186,500	166,940	87,460	810,850	836,170	870,430	916,040
1 1/4"	33,160	63,010	59,730				
1 1/8"	835,910	912,960	458,060				
<i>Total</i>	1,201,240	1,329,710	794,600	1,002,610	1,106,500	1,245,720	1,328,710
Scarto (linters)	24,660	26,960	18,490	26,220	26,560	28,750	37,200
Total production (including Scarto)	1,225,900	1,356,670	813,090	1,028,830	1,133,060	1,274,470	1,365,910

*) Second estimate.

The preparation of land for planting cotton is in progress under favourable weather conditions. This work is being carried out more actively than last year, especially in the largest estates with big crops, for the sake of early sowing.

Cotton.

COUNTRIES	AREA					PRODUCTION OF GINNED COTTON									
	1934/35	1933/34	Average 1928/29 to 1932/33	% 1934/35		1934/ 1935	1933/ 1934	Average 1928/29 to 1932/33	1934/ 1935	1933/ 1934	Average 1928/29 to 1932/33	% 1934/35			
				1933/ 1934	Average 1934							1933/ 1934	Average 1934		
														1933/ 1934	Average 1934
1,000 acres			= 100	= 100	1,000 centals			1,000 bales of 478 lb.			= 100	= 100			
Bulgaria	51	51	15	100.0	343.1	112	53	20	23	11	4	212.6	551.4		
Greece	109	71	47	153.8	232.8	238	152	78	50	32	16	156.4	303.9		
Italy	7	4	4)	201.9	119.4	21	6	12	4	1	3	369.9	170.8		
*Romania	2	5	2)	29.3	671.9	...	8	1	...	2	3)	...	...
U. S. S. R.	4,764	5,070	3,914	94.0	121.7	9,259	9,021	7,275	1,937	1,887	1,522	102.6	127.3		
United States 4) . .	27,515	29,978	40,514	91.8	67.9	46,514	62,366	70,105	9,731	13,047	14,666	74.6	66.3		
Mexico	418	424	379	98.5	110.2	997	1,245	969	209	260	203	80.1	102.9		
China	6,803	6,142	5,225	110.8	130.2	14,890	13,027	10,593	3,115	2,725	2,216	114.3	140.6		
*Chosen	480	433	459	110.8	104.5	...	669	645	...	140	135	...	...
India 5)	23,407	23,854	24,598	98.1	95.2	17,272	20,060	19,932	3,613	4,197	4,170	86.1	86.7		
Syria & Lebanon . .	31	19	48	160.9	64.8	54	20	51	11	4	11	266.2	106.3		
Turkey	491	400	433	122.7	113.4	366	610	389	77	128	81	60.0	94.2		
Egypt	1,798	1,873	1,752	96.0	102.6	7,727	8,494	7,169	1,617	1,777	1,500	91.0	107.8		
Uganda	1,171	1,091	808	107.4	145.0	1,000	1,091	819	209	228	171	91.7	122.0		
Anglo-Egypt.Sudan.	359	333	341	107.9	105.3	6) 723	646	675	6) 151	135	141	112.0	107.2		
TOTALS	66,924	69,310	78,080	96.6	85.7	99,173	116,791	118,087	20,747	24,432	24,704	84.9	84.0		

* Countries not included in the totals.

1) Average 1929/30 to 1932/33. — 2) Area less than 500 acres. — 3) Production less than 500 bales. — 4) Not including linters. — 5) Final report. — 6) Unofficial estimate.

Uganda: In general the rains continued throughout December and, in Buganda and Busoga, where normal temperatures obtained, these conditions led to a slight improvement in crop prospects. In other areas east of the Nile the extension of the rains was accompanied by cloudy weather and sub-normal temperatures, conditions that retarded growth and ripening and brought no improvement in crop prospects. In the Eastern Province early buyings indicated that, as a result of adverse growing conditions, grade of raw cotton would be below that of last year.

Anglo-Egyptian Sudan: Picking of the 1934-35 cotton crop is making good progress and damage caused by insects is up to the present less than usual. Compared with last year, an increase of 12 % is expected in the production of Sakellaridis, the increase occurring for the most part in Gezira. American irrigated, however, shows a decrease of 30 %. Rain-grown American is greater by 40 %, the increase taking place chiefly in Kordofan.

FLAX

COUNTRIES	†) AREA					†) PRODUCTION							
	1934	1933	Aver. 1928 to 1932	% 1934 1934/35		1934	1933	Aver. 1928 to 1932	1934	1933	Aver. 1928 to 1932	% 1934 1934/35	
	—	—	—	—		—	—	—	—	—	—	—	
	1934/35	1933/34	1928/29 to 1932/33	1933/ 1934 = 100	Aver. age = 100	1934/ 1935	1933/ 1934	1928/29 to 1932/33	1934/35	1933/34	1928/29 to 1932/33	1933/ 1934 = 100	Aver. = 100
	1,000 acres					1,000 centals			1,000 pounds				
Fibre.													
*Germany ††) . . .	22	12	25	180.0	88.3	592	343	—	59,210	34,336	—	172.4	—
Austria ††) . . .	4	4	9	99.3	50.0	50	63	123	4,960	6,260	12,282	79.2	40.4
Belgium . . .	34	27	48	126.8	70.5	453	372	323	45,335	37,180	32,332	121.9	140.2
Bulgaria . . .	4	1	1	368.6	462.2	13	2	2	1,271	235	202	540.9	629.5
Estonia . . .	53	41	65	128.3	81.3	156	114	168	15,618	11,369	16,788	137.4	93.0
Irish F. State . .	2	1	4	237.2	57.3	10	4	15	997	405	1,463	245.8	68.1
*Finland †) . . .	11	11	9	99.1	117.7	...	40	27	...	3,959	2,717	...	...
France . . .	58	37	63	157.0	91.8	295	203	461	29,495	20,287	46,056	145.4	64.0
N. Ireland . . .	16	10	23	160.2	69.7	82	49	93	8,236	4,867	9,256	169.2	89.0
Hungary . . .	37	20	23	187.8	160.2	23	74	89	2,304	7,442	8,948	31.0	25.7
Italy . . .	9	8	13	106.6	69.0	46	40	55	4,559	3,979	5,454	114.6	83.6
Latvia . . .	114	103	123	111.6	92.8	357	273	345	35,671	27,337	34,498	130.5	103.4
Lithuania . . .	150	135	179	111.0	83.9	478	400	586	47,796	39,971	58,624	119.6	81.5
Netherlands . . .	15	12	29	123.7	51.6	99	87	202	9,921	8,695	20,155	114.1	49.2
*Poland . . .	263	235	271	111.9	97.2	...	587	986	...	58,686	98,555	...	...
*Romania . . .	63	46	51	136.0	122.8	...	140	88	...	13,955	8,796	...	...
Czechoslovakia . .	23	18	33	133.9	70.6	122	79	141	12,246	7,931	14,097	154.4	86.9
Total Europe . . .	519	417	613	125.6	85.4	2,184	1,760	2,603	218,409	175,958	260,155	124.3	84.0
*U. S. S. R. †) . .	5,313	5,928	4,767	—	—	...	12,346	9,585	...	1,234,593	958,494	...	...
Egypt . . .	5	3	3	148.6	176.6	32	25	19	3,192	2,494	1,892	128.0	168.8
TOTALS . . .	524	420	616	126.0	85.9	2,216	1,785	2,622	221,601	178,452	262,047	124.4	84.5
Linseed													
						Thousand bushels of 56 pounds							
*Germany . . .	22	12	25	180.0	88.3	140	70	—	249	125	—	200.1	—
Austria . . .	3	3	5	99.4	51.4	10	10	19	19	17	34	107.5	54.0
Belgium . . .	34	27	48	126.8	70.5	151	134	240	270	239	429	112.7	62.9
Bulgaria . . .	4	1	1	368.6	462.2	19	4	4	34	8	7	420.0	452.0
Estonia . . .	53	41	65	128.3	81.3	162	136	174	290	244	311	118.8	93.2
France . . .	58	37	63	157.0	91.8	211	103	341	378	183	609	206.2	62.0
Hungary . . .	37	20	23	187.8	160.2	114	113	101	203	202	180	100.7	112.7
Italy . . .	10	10	32	99.2	30.3	46	49	124	82	87	222	93.3	36.7
Latvia . . .	114	103	123	111.6	92.8	334	272	325	597	485	580	123.1	103.0
Lithuania . . .	150	135	179	111.0	83.9	568	461	658	1,015	823	1,175	123.2	86.3
*Netherlands . . .	15	12	29	123.7	51.6	...	78	191	...	139	341	...	...
*Poland . . .	263	235	271	111.9	97.2	...	993	1,288	...	1,774	2,301	...	...
*Romania . . .	63	46	51	136.0	122.8	...	235	203	...	420	362	...	...
Czechoslovakia . .	23	18	33	133.9	70.6	94	59	111	168	105	199	159.0	84.2
Total Europe . . .	486	395	572	123.9	85.7	1,709	1,341	2,097	3,056	2,393	3,746	128.1	81.7
*U. S. S. R. †) . .	5,624	6,757	6,094	83.2	92.3	...	17,196	16,202	...	30,707	28,932	...	...
Canada . . .	227	244	486	93.2	46.7	510	354	1,784	910	632	3,186	144.0	28.6
United States . . .	974	1,328	2,757	73.3	35.3	2,942	3,890	8,938	5,253	6,947	15,961	75.6	32.9
India . . .	3,257	3,299	3,113	98.7	104.6	8,445	9,094	8,288	15,080	16,240	14,800	92.9	101.9
Turkey . . .	35	85	29	40.7	119.4	109	115	100	195	205	179	95.5	109.4
Egypt . . .	5	3	3	148.6	176.6	42	27	21	74	49	37	151.4	201.5
Eritrea . . .	5	4	2	133.3	200.0	26	20	24	47	35	43	133.3	110.2
French Morocco . .	31	30	57	105.2	55.2	183	70	284	326	125	507	260.0	64.2
Argentina . . .	¹⁰⁾ 7,216	¹⁰⁾ 6,852	¹⁰⁾ 7,517	105.3	96.0	40,345	31,747	40,074	72,044	56,691	71,560	127.1	100.7
Uruguay . . .	¹¹⁾ 6,919	¹¹⁾ 4,878	¹¹⁾ 6,641	141.8	104.2	2,658	1,611	1,863	4,747	2,876	3,327	165.0	142.7
TOTALS . . .	12,392	10,525	14,016	117.8	88.4	56,969	48,269	63,473	101,732	86,193	113,346	118.0	89.8

*) Countries not included in the totals. — †) The years indicated are those of the harvest, single years referring to the Northern hemisphere, double years to the Southern. — ††) Production expressed in terms of air-dried stalks. — §) In calculating the totals account has been taken of the probable area cultivated in some countries for which estimates of production are available but not those of area. — †) Flax and hemp. — ‡) Including 26,900 acres for seed. — 3) "Dolguets" variety. — 4) Area established by the plan. — 5) Including 10,000 acres for fibre. — 6) Total area including that for fibre. — 7) Area sown up to 20 June. — 8) Years 1931 and 1932. — 9) Years 1928, 1929 and 1931, 1932. — 10) Area sown. — 11) Area harvested.

France: It was expected in the West that sowings of linseed would this year be very extensive and would reach the pre-crisis level.

Great Britain and Northern Ireland: The flax crop in Northern Ireland gave very satisfactory yields, the average this year being 5.2 centsals per acre. This figure compares with 5.0 centsals in 1933 and an average of 4.1 centsals in the decennial period 1924-1933. As the table above shows, there was an increase of 60.2 % on last year in the area under this crop, and, judging by the number of enquiries for seed of the pure strain varieties, there is every likelihood of a further increase in the acreage being recorded this year.

U. S. S. R.: According to the Government plan the areas to be sown to flax (*dolgunets*) in 1935 have been fixed at 5,115,000 acres. The area actually cultivated in 1934 was, 5,313,000 acres.

Argentina: According to an official estimate the quantity of linseed exportable on 21 January was 33,643,000 centsals (60,076,000 bushel).

HEMP

COUNTRIES	AREA					PRODUCTION				
	1934	1933	Average 1928 to 1932	% 1934		1934	1933	Average 1928 to 1932	% 1934	
				1933	Aver- age				1933	Aver- age
1,000 acres					1,000 pounds					
<i>Fibre.</i>										
Germany 1)	1	1	1	180.5	81.0	—	—	—	—	—
Austria 2)	1	1	1	93.5	77.7	1,080	1,320	1,716	81.8	62.9
Bulgaria	14	13	10	107.5	147.0	6,948	4,693	3,166	148.1	219.5
France	7	6	9	108.5	70.0	5,925	5,791	8,940	102.3	66.3
Hungary 3)	27	21	19	127.5	145.5	—	14,836	12,235	—	—
Italy	148	141	184	105.2	80.6	133,325	129,720	165,657	102.8	80.5
Poland	81	79	78	102.0	103.8	—	22,993	38,793	—	—
Romania	113	118	101	95.4	112.1	—	57,397	46,604	—	—
Czechoslovakia . .	18	19	21	95.6	84.3	13,244	11,768	12,106	112.5	109.4
—										
U.S.S.R.	5) 1,448	1,866	2,174	77.6	66.6	—	339,733	587,887	—	—
—										
Syria and Lebanon	3	2	6	114.6	42.1	—	1,720	3,745	—	—
<i>Hempseed.</i>										
Austria	6) 1	6) 1	6) 1	89.7	44.0	88	81	172	109.3	51.2
Bulgaria	14	13	10	107.6	147.0	5,116	3,756	2,396	136.2	213.5
France	7	6	9	108.5	70.0	694	1,381	2,935	50.3	23.6
Hungary 3)	27	21	19	127.5	145.5	—	9,612	7,333	—	—
Italy	—	—	—	—	—	4,824	4,142	8,336	116.4	57.9
Czechoslovakia . .	18	19	21	95.6	84.4	8,978	7,648	9,268	117.4	96.9
—										
U.S.S.R.	5) 1,448	1,866	2,174	77.6	66.6	—	617,296	854,259	—	—

1) Hemp and other textile plants. — 2) Production expressed in terms of air-dried stalks. — 3) Unmixed crop. — 4) Including 3,158 acres for seed. — 5) Area sown up to 20 June. — 6) Area less than to 500 acres. — 7) Including 24,241 acres for fibre. — 8) Average 1929 to 1932.

U. S. S. R.: According to the Government plan the areas to be sown to hemp, in 1935 have been fixed at 1,632,000 acres. The area actually cultivated in 1934 was 1,448,000 acres.

HOPS

Statistics of the area and production of hops are not complete at present. Those of the four most important producing countries (the United States, England and Wales, Czechoslovakia and Germany) which together produce 85 % of the world total, and those of France and Belgium are, however, available.

Area cultivated to hops.

(in acres)

COUNTRIES	1934	1933	1932	1931	1930	Average 1930 to 1934	1929	Average 1925 to 1929
<i>Principal producing countries:</i>								
United States	35,800	30,300	22,000	21,400	19,499	25,800	24,400	23,270
England and Wales . .	17,764	16,895	16,532	19,529	19,996	18,143	23,987	24,531
Czechoslovakia . . .	27,053	25,371	23,631	30,194	38,450	28,940	41,331	32,070
Germany	23,851	23,638	19,801	25,326	32,307	24,985	37,620	35,902
<i>Total . . .</i>	<i>104,468</i>	<i>96,204</i>	<i>81,964</i>	<i>96,449</i>	<i>110,252</i>	<i>97,868</i>	<i>127,338</i>	<i>115,773</i>
	84.3 %	84.3 %	83.1 %	85.1 %	84.1 %	82.7 %	77.4 %	74.9 %
<i>Other producing countries:</i>								
France	5,004	4,221	4,361	5,894	7,517	5,399	10,510	11,024
Belgium	2,170	1,475	1,416	2,051	2,545	1,931	3,156	3,442
Yugoslavia . . . . .	...	4,186	3,613	5,622	7,139	...	12,630	14,355
Poland . . . . .	...	5,424	4,875	—	—	...	6,264	6,076
Canada . . . . .	...	983	689	924	949	...	1,164	870
Austria, Hungary and Rumania . . . . .	...	455	430	902	919	...	1,554	909
Australia . . . . .	...	1,236	1,307	1,502	1,804	...	1,997	2,177
<i>Total . . .</i>	<i>*) 20,000</i>	<i>17,980</i>	<i>16,691</i>	<i>16,895</i>	<i>20,873</i>	<i>*) 20,000</i>	<i>37,275</i>	<i>38,853</i>
	15.7 %	15.7 %	16.9 %	14.9 %	15.9 %	17.3 %	22.6 %	25.1 %
WORLD TOTAL . . .	*) 124,000	114,184	98,655	113,344	131,125	*) 118,000	164,613	154,626
	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %

*) Estimate.

If the situation in the other producing countries is assumed to be about the same as in 1933, total production in 1934 (excluding that of the U. S. S. R.) may be estimated to amount in round figures to about 120,000,000 lb. obtained from an acreage of 124,000 acres.

As the figures in the following tables show, this production, although 28.3 % smaller than the record output of 1929 and 11.2 % smaller than the average of the years 1925 to 1929, is substantially greater than the 1931 and 1933 crops and approximates to that of 1930.

These results are to be attributed partly to an expansion in the cultivation of hops. The area under the crop, which declined considerably from 1929 to 1932 owing to the unfavourable market conditions, increased in 1933 and 1934, particularly in the United States but also in Europe.

Production of hops.

(in thousand pounds)

COUNTRIES	1934	1933	1932	1931	1930	Average 1930 to 1934	1929	Average 1925 to 1929
<i>Principal producing countries:</i>								
United States	40,344.9	39,964.9	24,058.0	26,409.9	23,446.9	30,844.9	33,194.9	31,378.3
England and Wales	29,007.9	24,191.8	21,056.0	18,927.9	28,335.9	24,303.9	40,207.8	34,563.1
Czechoslovakia	15,477.8	13,818.0	16,583.0	27,177.4	32,464.1	21,104.1	26,053.4	21,519.8
Germany	14,427.1	14,977.4	10,928.6	17,152.0	24,366.5	16,370.3	30,074.5	16,111.2
<i>Total</i>	<i>99,257.7</i>	<i>92,952.1</i>	<i>72,625.6</i>	<i>89,667.2</i>	<i>108,613.4</i>	<i>92,623.2</i>	<i>129,530.6</i>	<i>103,572.4</i>
	83.7 %	86.9 %	86.7 %	90.6 %	86.8 %	85.9 %	78.0 %	77.2 %
<i>Other producing countries:</i>								
France	6,025.9	3,178.4	1,710.8	1,178.2	6,088.7	3,636.4	13,776.3	10,798.5
Belgium	3,871.3	1,580.1	1,531.3	1,148.4	2,961.0	2,218.4	4,370.0	5,117.8
Yugoslavia . . . . .	...	3,228.2	1,818.6	3,499.0	3,873.1	...	10,064.8	7,229.4
Poland . . . . .	...	2,541.3	3,456.1	—	—	...	3,842.2	3,402.8
Canada . . . . .	...	1,477.3	791.2	1,230.2	1,166.0	...	1,444.7	1,130.5
Austria, Hungary and Rumania . . . . .	...	299.4	209.7	424.8	436.1	...	709.7	447.3
Australia . . . . .	...	1,653.5	1,669.3	1,810.2	1,972.7	...	2,339.8	2,408.3
<i>Total</i>	<i>*)21,000.0</i>	<i>13,958.2</i>	<i>11,167.0</i>	<i>9,290.8</i>	<i>16,497.6</i>	<i>*)15,000.0</i>	<i>36,547.5</i>	<i>30,534.6</i>
	16.3 %	13.1 %	13.3 %	9.4 %	13.2 %	14.1 %	22.0 %	22.8 %
<i>WORLD TOTAL</i>	<i>*)120,000.0</i>	<i>106,910.3</i>	<i>83,792.6</i>	<i>98,958.0</i>	<i>125,111.0</i>	<i>*)108,000.0</i>	<i>166,078.1</i>	<i>134,107.0</i>
	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %

*) Estimate.

In addition, the weather conditions of 1934 in some countries were very favourable to the development of the hop crop so that the average yield for the world reach 963.5 lb. per acre and exceeded those of the last four years (945.7 in 1933, 883.2 in 1932, 874.3 in 1931 and 954.6 in 1930) as well as that of the 1925-1929 quinquennial average (865.4 lb. per acre).

The factor which contributed most to increase the average world yield was the excellent crop in England. The yields obtained in the United States, Czechoslovakia and Germany, on the other hand, fell short of the average.

Yield in pounds per acre.

Countries	1934	1933	1932	1931	1930	Average 1930 to 1934	1929	Average 1925 to 1929
United States	1,124.1	1,320.4	1,097.4	1,231.2	1,204.4	1,195.5	1,409.6	1,347.2
England and Wales	1,632.7	1,427.5	1,275.8	972.5	1,418.5	1,338.3	1,677.3	1,409.6
Czechoslovakia	571.0	544.2	704.8	901.1	847.6	731.6	633.4	669.1
Germany	606.7	633.4	553.1	678.0	758.3	651.3	803.0	446.1

It should be pointed out that the totals do not comprise figures of area and production in the U. S. S. R. which are unavailable. It is known only that the Government has taken a number of steps to assist cultivators of this crop, e. g., exemption from agricultural taxes of land to be used for hops, price fixing for hops to supplied to the State, granting of credits for a period of five years at the rate of 3,000 roubles per hectare for making new hop plantations, construction of drying plant at points where the hop crop is concentrated. Furthermore, the destruction of existing hop fields is forbidden without special authorisation from the Commissariat for Agriculture. It is expected that in 1937, when the second five-year plan comes to an end, the hop area in the Soviet Union will have reached 10,000 acres, more than half of which will be in Ukraina.

* * *

The average prices of hops on the two most important markets were in 1934 as follows, in comparison with those of preceding years.

Price of hops.

Years	(Gold francs per quintal)	Zateč	Nürnberg
1934		466.95	510.49
1933		557.46	605.04
1932		140.58	248.68
1931		102.88	118.50
1930		206.36	215.11
1929		326.94	321.31
1928		602.14	566.04

In the accompanying table are shown the monthly movement in hop prices on the same markets and in New York.

Price of hops.

(Gold francs per quintal).

Months	Zateč		Nürnberg	
	1934	1933	1934	1933
January	568.74	317.24	580.45	518.70
February	436.03	317.24	580.45	518.70
March	441.40	317.86	580.45	469.30
April	415.70	357.90	563.79	524.87
May	384.21	626.78	541.16	663.60
June	386.78	745.98	522.04	718.77
July	516.37	682.84	519.97	686.66
August	480.67	682.44	*) 518.78	571.19
September	446.89	840.84	*) 472.39	676.16
October	465.79	713.64	*) 442.13	687.40
November	512.95	587.36	*) 395.20	644.67
December	547.90	587.36	*) 409.07	580.45

*) Average prices of new crops: gold francs: August 787.95; September 815.10; October 815.15; November 815.10 and December 743.77.

Months	New-York			
	Hops, Pacific (medium to prime)		Hops, imported (medium)	
	1934	1933	1934	1933
January	265.92	337.09	740.27	n. q.
February	241.90	314.23	684.24	n. q.
March	238.59	359.94	661.22	737.02
April	220.33	406.10	616.91	888.01
May	219.90	760.07	615.71	1,125.49
June	225.41	755.18	616.91	1,066.13
July	214.75	529.83	629.04	897.43
August	188.71	403.37	621.24	862.89
September	172.01	356.81	587.84	763.49
October	156.08	315.83	637.75	884.71
November	139.02	265.30	644.24	751.68
December	119.02	286.33	646.12	779.25
<i>Annual average</i>	<i>202.14</i>	<i>424.34</i>	<i>641.79</i>	<i>870.61</i>

A substantial increase in the production of beer compared with 1933 occurred in 1934 in the chief consuming countries.

A.-K. F.

TOBACCO

U. S. S. R.: According to the Government plan the areas to be sown to tobacco in 1935 have been fixed at 497,000 acres.

Cuba: Depression persists and very little business has been transacted. The fall in demand for Vuelta Abajo of superior quality has led planters in San Juan Martinez and some other districts to declare that they will not plant tobacco this year. In trade circles this declaration is regarded as an attempt to move surplus stocks from the 1933-34 crops. Despite the lack of activity on the market prices remain at a level the same as if not higher than those of last year for Pinar del Ruo. Remedios is selling at prices slightly below those of last year.

Exports of tobacco and tobacco products in September rose to 1,470,000 pesos, which indicates a decrease of 310,000 pesos (17.5 %) on the figure of August exports and 493,000 (25.1 %) on the exports of September 1933. In the first nine months of 1934 these exports rose to 11,268,000, or 966,000 more than in the corresponding period of 1933. This difference is due to an increase of 1,032,000 pesos in the exports of tobacco products, slightly compensated by a decrease of 66,000 in exports of leaf tobacco.

Exports of cigars in the first nine months of 1934 show an increase of 36.6 %, cigarettes one of 5 %, and pipe tobacco one of 56 %.

During this part of the year the rains hindered planting of the new crop, which will probably be somewhat late.

Indo-China: Transplanting was proceeding in the north of Annam at the end of December. The crop in the central and southern parts was good. In Cochín-China vegetation was excellent. In Cambodia transplanting was still proceeding in some places at the end of December.

Tobacco.

COUNTRIES	AREA					PRODUCTION						
	1934	1933	Average 1928 to 1932	% 1934		1934	1933	Average 1928 to 1932	% 1934			
				1933	Aver- age				1933	Aver- age		
1,000 acres				= 100	= 100	1,000 pounds			= 100	= 100		
*Germany 1). . . .	30	30	2)	26	102.4	115.8	...	64,890	2)	56,664	...	...
Belgium	7	7		7	108.9	100.8	14,201	14,077		14,820	100.9	95.8
Bulgaria	49	67		73	73.0	67.6	32,872	53,915		54,810	61.0	60.0
Greece	185	192		217	96.7	85.5	92,594	120,987		117,205	76.5	79.0
Hungary	40	45		58	89.4	69.4	46,155	52,583		73,327	87.8	62.9
Italy	88	88		100	100.2	87.9	90,831	97,842		103,978	92.8	87.4
*Romania	25	25		59	99.2	42.1	...	13,844		36,989	...	...
*Switzerland . . .	2	2		1	115.0	202.2	...	2,436		1,515	...	...
Czechoslovakia . .	25	25		19	100.8	130.3	32,079	25,957		25,085	123.5	127.9
Total Europe . . .	394	424		474	93.6	83.3	308,732	365,361		389,225	84.4	79.2
Canada . . . . .	...	46		46	...	...	38,120	44,873		42,795	85.0	89.1
United States . . .	1,335	1,757		1,875	76.0	71.2	1,095,662	1,377,639		1,433,512	79.5	76.4
Japan	85	84		89	101.1	95.7	148,989	146,696		142,612	101.6	104.5
Syria and Lebanon .	14	17		11	79.2	118.0	8,494	6,712		6,828	126.6	124.4
Turkey	s) 148	126		134	117.6	110.7	88,185	77,971		82,431	113.1	107.0
Algeria	47	42		58	112.3	80.3	35,274	28,850		44,779	122.3	78.8
GRAND TOTAL . . .	s) 2,069	2,496		2,687	82.9	76.9	1,723,456	2,048,102		2,142,182	84.1	80.4

*) Countries not included in the totals. — §) In calculating the total account has been taken of the probable area cultivated in Canada for which an estimate of production is available but not one of area.

1) Production for sale. — 2) Average 1931 and 1932. — 3) Unofficial data.

Algeria: In spite of precautionary measures, some frost damage was caused in nurseries in Constantine where more than half the Algerian output is grown. The bad weather has prevented deep winter tilling in the fields intended for transplanting.

OTHER PRODUCTS

Cacao.

Brazil: According to the Instituto de Cacau da Bahia the total arrivals at the port of Bahia in 1934 were 216 million pounds while shipments amounted to 220 million. These export figures include 50 million pounds of the 1933-34 crop, which means that of the present crop 170 million pounds have already been exported. Stocks in Bahia without taking into account Ilheus and other small ports amounted on 31 December to 9 million pounds. There are no stocks in the interior worth mentioning. From the above statistics it may be deduced that total production for the present season will not be over 198 million pounds. International consumption is approximately 7 million pounds.

The following are the latest statistics for the Ilhéos crop:

Entries by rail (1000 lb.):

Entries by rail (1000 lb.)	January 1935	May 1934 to January 1935	January 1934	May 1933 to January 1934
Ilhéos zone	7,496	78,705	8,598	79,587
Rio de Contas zone . .	661	9,259	661	8,378

Weather has been favourable and if no contrary factors intervene, some small arrivals of beans may be expected next May.

Gold Coast and British Togoland: During the second half of December harvesting proceeded normally throughout the cacao areas favourable, weather being reported from all districts. The hours of sunshine per day increased from seven to eight. No rain-fall was recorded at Nsawam, Kumasi and Bekwai and the average number of wet days for all key stations for the half-month was two, giving 20.6 mm. (0.81 inch) of rain.

The following table shows the estimated production and the progress of harvesting and marketing up to the end of December. Minor changes have been made since the last report in the divisional estimates.

	Production (million lb)	Percentage harvested	Percentage marketed
Ashanti	164	85	50
Western Province.	26	81	58
Central Province	107	85	61
Eastern Province.	202	83	57
Trans-Volta	21	82	60
Total	520	84	57

The weighted mean of harvesting for the whole area works out at 84 % against 81 % for last season's major crop at the end of December 1933. At same time last season 64 % had been marketed, a difference of 7 %, this is reflected in the stocks held by farmers, which were estimated at 17 % last season against 27 % this season. These figures indicate a general slowing up of marketing, the net effect being an increase of 10 %, equivalent to about 52 million pounds, in the amount held by farmers, but there is no organized holding and cacao is coming on the market all the time.

Adding the estimated export over the Eastern Frontier of 6 million pounds to the exports of 149 million by sea in October-December, the total export for the Three months is 155 million pounds. Deducting the 4 millions of minor crop carryover and adding the estimated stocks of 145 million pounds the total marketed up to the end of December was 296 million pounds. The amount of major crop still to come in was therefore 224 million pounds.

The following are the data of crop movement in the first three months of the season, in millions of pounds:

	December 1934	Oct.-Dec. 1934	December 1933	Oct.-Dec. 1933
Railway offloadings, Takoradi. .	41	82	49	96
Exports:				
Takoradi	17	41	29	56
Accra.	30	64	29	56
All ports	73	149	79	139

In general quality compares favourably with previous years. Purity in December was 90.1 %. Size of beans was 123.2 per 14 cubic inches, 102.0 per 4 ounces or $(22.6 \times 12.2 \times 7.1)$ mm.

In some districts, however, the percentage of mouldy and germinated beans was latterly above normal, defects attributable to leaving ripe pods too long on the trees and to storing in unfavourable conditions.

Tea.

Indo-China: The harvest in Tonkin, after having been held up in the middle of the month, proved to be poor. These were infestations of "green fly", *Andraca bipunctata* and red rut. Vegetation was impeded by the frequent rains.

Coffee.

Brazil: According to the National Coffee Bureau the amount of coffee destroyed up to the end of December was 4,512 million pounds, of which 1,093 million was destroyed in 1934.

Indo-China: Harvesting was proceeding normally at the Phw-ho experimental station in Tonkin but settlers' plantations suffered severely from the cold wave experienced at the beginning of December. The well-formed berries might still yield a crop of inferior quality but there was some danger that those from the last blossomings might undergo premature drying. The extent of *Humilia devastatrix* affecting *arabica* and *excelsa* varieties continued to be serious.

Kenya: Production of clean coffee was estimated in November at 24,977,800 lb. as against 26,321,000 lb. in 1933-34 and 23,845,900 lb. on the average 1928-29 to 1932-33. Percentages: 94.9 and 104.7.

Groundnuts.

Indo-China: The harvest was in progress in the southern and central areas of An-nam at the end of December. Yields were satisfactory.

French West Africa: The outlook for the 1934-35 crop was good, on the whole, in the Sudan where the crop shows an extension, and thus the expectation of a total harvest in the colony smaller than that of last year but larger than the average is confirmed and even improved upon.

Egypt: The area under groundnuts harvested in 1934 was 22,900 acres against 21,500 in 1933 and an average of 22,500 in the five years 1928-32. Percentages: 106.3 and 101.7. Production was 303,600 centals of unshelled groundnuts, against 251,200 and 347,600 respectively. Percentages: 120.9 and 87.3.

Colza and sesame.

Germany: According to the first estimate the area sown to colza and turnips this year is about 128,000 acres against 61,000 acres. Percentage: 212.2.

Austria: On 1 February condition of winter colza was 1.9 against 1.8 on 1 January this year and 2.2 on 1 February 1934.

Romania: The severe frosts of the first half of January caused serious damage to winter colza. In some counties the area destroyed by frost was 50 % of that sown.

Czechoslovakia: According to the definitive estimate area cultivated to colza last year was about 3,300 acres against 2,400 in 1933 and 4,000 on the average of the five years ending 1932; percentages 137.1 and 82.4. The corresponding production is estimated at about 32,100 centals (64,200 short tons) against 22,800 (45,600) and 38,200 (76,500); percentages 141.0 and 84.0.

Syria and Lebanon: According to the most recent estimate area cultivated to sesame in 1934 was about 10,900 acres against 8,700 in 1933 and 9,900 on the average of the five years ending 1932; percentages: 125.6 and 110.1. The corresponding production is estimated at about 53,600 centals (2,680 short tons) against 24,400 (1,220) and 52,100 (2,600); percentages: 219.5 and 102.9.

Egypt: The area under sesame harvested in 1934 was 21,400 acres compared with 20,200 acres in 1933 and an average of 14,900 acres in the five years 1928-32. Percentages: 106.3 and 144.1. Production was 140,700 centals (7,040 short tons) against 126,600 (6,330) in 1933 and 102,500 (5,120) in the period 1928-32. Percentages: 111.2 and 137.3.

Sericulture.

Indo-China: Pruning of mulberries was proceeding in Annam at the end of December. Rearings in both Annam and Cambodia were still limited.

Sericulture.

COUNTRIES	QUANTITIES OF EGGS PREPARED FOR INCUBATION					PRODUCTION OF COCOONS				
	1934	1933	Average 1928 to 1932	% 1934		1934	1933	Average 1928 to 1932	% 1934	
				1933	Aver. age				1933	Aver. age
1,000 ounces			= 100	= 100	1,000 pounds			= 100	= 100	
Bulgaria	27	27	36	100.6	76.3	2,956	3,006	3,978	98.3	74.3
France	18	16	35	106.4	49.8	2,150	2,079	3,984	103.4	54.0
Italy	442	519	841	85.2	52.6	63,618	75,431	101,975	84.3	62.4
Totals for Europe .	487	562	912	86.3	53.3	68,724	80,516	109,937	85.4	62.5
Chosen s).	227	220	211	103.2	107.2	33,566	30,016	26,161	111.8	128.3
Japan { s)	2,732	2,864	2,735	95.4	99.9	400,062	413,525	422,161	96.7	94.8
{ f)	2,944	3,527	3,383	83.5	87.0	320,851	422,830	386,434	75.9	83.0
Syria and Lebanon	47	52	87	91.3	54.7	2,866	4,068	6,623	70.5	43.3
Turkey	53	46	54	115.3	98.2	6,614	4,171	2,812	158.6	235.2
GENERAL TOTALS .	6,490	7,271	7,382	89.2	88.0	832,683	955,126	954,128	87.2	87.3

s): Spring cocoons. — f) Summer-autumn cocoons.

FODDER CROPS

Austria: At the beginning of February condition of the principal fodder crops was as follows: red clover 2.1 (against 2.1 on 1 January of this year and 2.7 on 1 February 1934); alfalfa 2.1 (2.1, 2.9); clover mixtures 2.0 (2.1, 2.6); permanent meadows 2.1 (2.4, 2.5) and pasture 2.4 (2.5, 2.4).

Estonia: Fodder production was plentiful and the milk yield was quite satisfactory.

Irish Free State: The weather during January was broken and showery during the first half of the month and dry and cold during the remainder. The general mildness of the preceding period favoured a late growth of pastures.

Supplies of fodder and concentrated foods were adequate for all normal requirements.

France: The mild wet weather, though broken by some short periods of very severe cold, was on the whole favourable to fodder crops.

Italy: Final estimates of the fodder production of 1934 (expressed in ordinary hay) compared with those of 1933 and the averages of the years 1928-1932 are shown below:—

	1934	1933	Average 1928-1932	% 1934 1933 = 100	% 1934 Average = 100
	(1,000 centsals)				
Temporary meadows	315,732	276,434	243,124	114.2	129.9
Fodder catch crops	49,785	45,627	38,835	109.1	128.2
Non-irrigated permanent meadows	77,574	70,070	69,567	110.7	111.5
Irrigated permanent meadows	54,845	50,936	50,252	107.7	109.1
Permanent pasture	57,581	50,949	56,968	113.0	101.1
Other fodder production . .	115,487	107,282	96,993	107.6	119.1
Total . . .	<u>671,004</u>	<u>601,298</u>	<u>555,739</u>	<u>111.6</u>	<u>120.7</u>
	(1,000 sh. tons)				
Temporary meadows	15,786	13,822	12,156	114.2	128.9
Fodder catch crops	2,489	2,281	1,942	109.1	129.2
Non-irrigated permanent meadows	3,879	3,503	3,478	110.7	111.5
Irrigated permanent meadows	2,742	2,547	2,513	107.7	109.1
Permanent pasture	2,879	2,547	2,848	113.0	101.1
Other fodder production . .	5,774	5,304	4,850	107.6	119.1
Total . . .	<u>33,549</u>	<u>30,064</u>	<u>27,787</u>	<u>111.6</u>	<u>120.7</u>

Fodder crops developed well during the first half of January. Frosts subsequently caused some damage in a few areas.

Portugal: Fodder crops in general suffered from bad weather in January. Frosts, strong winds and lack of moisture hindered development of meadows and pastures.

Canada: The following are the most recent estimates of the acreage and production of certain fodder crops in 1934 compared with the corresponding figures of 1933 and the average of the preceding five year period 1928-32:—

	1934	1933	Average 1928-1932	% 1933 = 100	% 1934 Aver. = 100
<i>Area (1000 acres).</i>					
Hay and Clover	8,881	8,876	9,769	100.1	90.9
Grain hay	1,005	1,949	1,752	51.6	57.4
Alfalfa	679	722	724	94.1	93.8
Maize for fodder	497	379	398	131.2	124.8
Turnips, etc.	187	184	192	101.9	97.7

<i>Production.</i>					
Hay and clover (1000 centals)	223,480	228,860	305,056	97.6	73.3
(1000 sh. tons)	11,174	11,443	15,253		
Grain hay (1000 centals)	36,040	58,960	64,936	61.1	55.5
(1000 sh. tons)	1,802	2,048	3,247		
Alfalfa (1000 centals)	26,562	33,046	34,544	80.4	76.9
(1000 sh. tons)	1,328	1,652	1,727		
Maize for fodder (1000 centals)	76,300	62,456	64,822	122.2	117.7
(1000 sh. tons)	3,815	3,123	3,241		
Turnips, etc. (1000 centals)	40,538	34,618	37,615	117.1	107.8
(1000 sh. tons)	2,027	1,731	1,881		

United States: The following are the December estimates of the acreage and production of hay seeds in 1934 with the revised figures for 1933 and the averages of the five years 1928-32:—

	1934	1933	Average 1928-1932	% 1933 = 100	% 1934 Average = 100
<i>Area (1000 acres).</i>					
Clover seed (red and alsike)	964	1,096	1,078	87.9	89.5
Alfalfa seed	392	451	341	86.9	115.1
Sweet clover seed	189	213	235	88.6	80.2
Timothy seed	126	281	409	44.9	30.8

<i>Production.</i>					
Clover seed (red and alsike):					
(ooo centals)	659	894	946		
(ooo bushels)	1,099	1,489	1,577	73.8	69.7
Alfalfa seed:					
(ooo centals)	492	615	494		
(ooo bushels)	821	1,026	823	80.0	99.7
Sweet clover seed:					
(ooo centals)	376	426	535		
(ooo bushels)	626	710	891	88.2	70.3
Timothy seed:					
(ooo centals)	118	376	693		
(ooo bushels)	262	835	1,540	31.4	17.0

The most recent estimates of the production of hay in the United States are the following:—

	1934	1933	Average 1928-1932	% 1933 = 100	% 1934 Aver. = 100
<i>Area (1000 acres).</i>					
Tame Hay	51,495	53,965	53,725	95.4	95.8
Wild Hay	8,899	12,276	13,366	72.5	66.6
<i>Production.</i>					
Tame Hay (1000 centals)	1,038,820	1,322,600	1,391,816	78.5	74.6
(1000 sh. tons)	51,941	66,130	69,591		
Wild Hay (1000 centals)	94,980	169,540	215,868	56.0	44.0
(1000 sh. tons)	4,749	8,477	10,793		

Algeria: Cold weather and snow retarded growth.

Egypt. The growth of bersim was slightly retarded during January owing to cold weather turning the leaves red in some areas, especially in the late crops. Conditions have, however, improved with the improvement of the weather. The first cutting is in progress in the early and general crops.

LIVESTOCK AND DERIVATIVES.

Livestock in Germany.

In the following table are given provisional data of the last annual census with the data of the five preceding years and of 1914 for comparison.

Numbers of Livestock in Germany (1).

(thousands)

CATEGORIES	5 Dec.	5 Dec.	1 Dec.	1 Dec.	1 Dec.	2 Dec.	1 Dec.	% 1934	
	1934	1933	1932	1931	1930	1929	1913 1)	1933 = 100	1913 = 100
Horses (2)	3,374	3,397	3,395	3,451	3,522	3,617	3) 3,807	99.3	88.6
of which:									
Horses under 1 year old . . .	183	145	136	130	127	135	—	126.2	—
Horses from 1 to 3 years old .	278	262	257	258	274	275	—	106.1	—
Horses from 3 to 9 years old .	4) 1,083	1,250	1,371	1,490	1,631	1,768	—	86.6	—
Horses 9 years old and over .	4) 1,803	1,740	1,631	1,573	1,490	1,439	—	103.6	—
Asses and mules	5) 11	5) 13	14	16	19	21	6) 10	84.6	110.0
Cattle	19,165	19,740	19,139	19,124	18,470	18,033	18,474	97.1	103.7
of which:									
Calves under 3 months old . .	1,354	1,678	1,484	1,618	1,648	1,512	1,684	80.7	80.4
Young cattle from 3 months to 2 years old	6,013	5,980	5,964	6,147	5,619	5,422	5,449	100.6	110.4
Oxen and bulls 2 years old and over	728	878	866	767	761	743	1,369	82.9	53.2
Cows and heifers of 2 years old and over	11,070	11,202	10,825	10,592	10,442	10,356	9,972	98.8	110.0
of which:									
Milk cows for milk	7,639	7,647	7,371	7,264	7,112	7,075	—	99.9	—
Milk cows for milk and work.	2,455	2,452	2,431	2,395	2,342	2,322	—	100.1	—
Pigs	23,125	23,890	22,859	23,808	23,442	19,944	22,533	96.8	102.6
Sheep	3,482	3,387	3,405	3,499	3,504	3,480	4,988	102.8	69.8
of which:									
Ewes 1 year old and over . .	2,400	2,348	2,123	2,198	2,180	2,191	—	102.2	—
Goats	2,489	2,585	2,503	2,516	2,581	2,625	3,164	96.3	78.7
of which:									
Goats 1 year old and over . .	2,089	2,126	2,021	2,053	2,120	2,222	—	98.3	—
Poultry	93,980	96,901	93,538	93,499	98,232	92,154	67) 1,907	97.0	130.7
of which:									
Geese	5,839	6,143	5,790	5,685	6,246	5,564	6) 5,851	95.1	99.8
Ducks	2,821	3,389	3,523	3,540	3,882	3,316	6) 2,086	83.2	135.2
Fowls	85,320	87,053	84,225	84,224	88,104	83,274	6) 63,970	98.0	133.4
of which:									
Laying hens	57,899	63,120	68,730	67,964	69,908	66,464	—	91.7	—
Young hens 7)	4) 20,893	—	—	—	—	—	—	—	—
Cocks chickens and other hens	4) 6,357	—	—	—	—	—	—	—	—
Beehives	1,992	2,102	1,916	1,872	2,002	1,728	6) 2,299	94.8	86.6
Rabbits	7,298	—	—	—	—	—	—	—	—

1) Present territory, not. including the Saar. — 2) Not including army horses, which numbered, 40,428 in 1934, 40,531 in 1933 and 1932, 40,616 in 1931, 40,649 in 1930, 40,487 in 1929. — 3) Including army horses. — 4) Not including animals in Berlin. — 5) Not including 799 army asses and mules in 1934 and 1933. — 6) 1912. — 7) Young hens that had not yet laid at the date of the census.

Number of Pigs in Denmark (*in rural communes only*).

(thousands)

Classification	1935	1934								1933		
	15 Jan.	1 Dec.	15 Oct.	1 Sept.	16 July	1 June	14 April	1 March	16 Jan.	15 Dec.	14 Oct.	15 July
Boars for reproduction	19	20	20	21	21	22	22	22	21	23	24	25
Sows in farrow for first time . .	72	48	29	40	66	82	68	59	40	36	38	41
Other sows in farrow	181	190	187	180	165	166	170	178	170	176	206	239
Sows in milk	77	74	82	78	89	82	78	74	88	90	102	115
Sows not yet covered (and not for slaughter) .	19	21	25	29	24	23	21	23	29	34	34	34
Sows for slaughter . . .	9	11	10	10	11	10	11	13	24	26	25	15
<i>Total of sows</i>	<i>358</i>	<i>344</i>	<i>333</i>	<i>337</i>	<i>355</i>	<i>363</i>	<i>348</i>	<i>347</i>	<i>351</i>	<i>362</i>	<i>405</i>	<i>444</i>
Sucking pigs not weaned	668	653	720	680	774	711	659	631	726	733	916	1,029
Young and adult pigs for slaughter:												
Weaned pigs under 35 kg. .	762	745	734	790	737	672	719	792	890	974	1,075	1,068
Pigs of 35 and under 60 kg. .	667	646	711	661	647	664	694	743	817	892	951	997
Fat pigs of 60 kg. and over .	451	621	590	503	523	595	639	649	669	740	825	827
<i>Total pigs</i>	<i>2,925</i>	<i>3,029</i>	<i>3,108</i>	<i>2,992</i>	<i>3,057</i>	<i>3,027</i>	<i>3,081</i>	<i>3,184</i>	<i>3,474</i>	<i>3,724</i>	<i>4,196</i>	<i>4,390</i>

The total number of sows has increased slightly compared with that of the corresponding period of 1934, the increase being most marked in the category of sows in farrow for the first time.

The total number of pigs has again fallen and is now the lowest recorded for ten years, the category of pigs of 60 kilograms and over showing the greatest decline.

Livestock in Canada.

The numbers of livestock in Canada in June 1934 compared with the corresponding figures for the preceding five years are as follows:

Classification	1934	1933	1932	1931	1930	1929
			(thousands)			
<i>Horses</i>	<i>2,933</i>	<i>2,984</i>	<i>3,094</i>	<i>3,129</i>	<i>3,295</i>	<i>3,377</i>
Stallions	18	17	16	...	20	21
Mares	1,379	1,406	1,463	...	1,556	1,606
Geldings	1,240	1,295	1,329	...	1,407	1,447
Colts and fillies under 2 years .	297	266	286	...	312	303
<i>Cattle</i>	<i>8,952</i>	<i>8,876</i>	<i>8,511</i>	<i>7,991</i>	<i>8,937</i>	<i>8,821</i>
Bulls 1 year old and over . .	261	260	272	...	286	265
Cows kept mainly for milk .	3,864	3,694	3,725	3,513	3,683	3,685
Calves	2,054	2,125	2,003	...	1,935	1,996
Other cattle	2,772	2,797	2,511	...	3,033	2,885

Classification	1934	1933	1932 (thousands)	1931	1930	1929
Sheep	3,421	3,386	3,644	3,608	3,696	3,636
Sheep	1,898	1,878	1,982	...	2,015	1,885
Lambs	1,523	1,508	1,662	...	1,681	1,751
Swine	3,654	3,801	4,639	4,717	4,000	4,382
Poultry	59,799	59,324	64,080	65,468	60,795	59,933
Hens, etc.	55,429	54,943	59,843	61,572	56,247	55,243
Turkeys	2,644	2,580	2,478	2,232	2,399	2,423
Geese	944	963	948	904	1,160	1,155
Ducks	782	838	811	760	989	1,112

1) Of which, 2,602,500 head under 6 months and 1,051,500 over 6 months old.

These figures do not include the numbers of livestock on Indian Reserves which were as follows for the years 1929-1934.

Numbers of Livestock on Indian Reserves 1929-1934.

Classification	1934	1933	1932 (thousands)	1931	1930	1929
Horses	31	35	38	41	37	40
Cattle	47	46	45	46	45	43
Sheep	3	3	3	4	3	3
Swine	7	9	13	8	10	14
Poultry	134	139	136	143	144	171

Livestock in the United States.

The following are the numbers of livestock on farms in the United States on 1 January 1935 compared with the numbers at the same date in 1934 and 1933:—

	1935	1934 (thousands)	1933
Horses	11,827	11,963	12,203
Mules	4,795	4,925	5,036
Pigs	37,007	57,177	61,598
Sheep	49,766	52,212	51,672
Cattle	60,667	68,290	65,704
Including:			
Cows and heifers (1)	25,100	26,185	25,285
Young heifers (2)	4,286	4,788	4,703

The numbers recorded this year reveal some striking declines from those of last and reflect the poor production of fodder crops obtained after the drought of 1934. Cattle at 60,667,000 are nearly 8 million fewer than the number a year ago. The number of pigs shows a heavy decrease of more than 20 million, while sheep have declined by more than 2 million. The number of horses and mules show only slight variations from the two previous years.

1) 1 years old and over, kept for milk.

2) 1 to 2 years old, kept for milk cows.

Livestock in Turkey.

On the basis of recent information from the Central Statistical Office there are given below the numbers of livestock taxed in Turkey in 1934 with comparative figures for the five years preceding; these data do not include sheep and goats of under one year, camels under two years, buffaloes, cattle, horses, mules and donkeys under three years or animals working in State service or the Army or in vehicles paying the tax on profits.

Taxed livestock in Turkey.

(thousands)

Years	Sheep	Ordinary goats	Angora goats	Cattle	Buffaloes	Camels	Horses	Mules	Donkey	Total
1934	10,719	6,362	2,636	5,169	539	88	563	46	955	27,077
1933	11,071	6,672	3,081	5,124	542	85	534	45	899	28,052
1932	11,768	7,510	3,315	5,315	555	86	511	40	908	30,009
1931	11,762	8,777	3,455	4,869	494	80	481	40	883	30,840
1930	10,498	8,316	2,840	4,725	508	72	459	38	856	28,319
1929	10,184	8,343	2,785	4,684	492	74	454	35	844	27,895

New Zealand lambing estimate.

The following table gives the estimate of the current season's lambing, computed from estimated average percentages; corresponding figures for the seven preceding years, together with the actual numbers of lambs tailed, are given for comparison.

YEARS	Number of breeding-ewes (thousands)	Estimated average percentage of lambing	Estimated number of lambs (thousands)	Actual number of lambs tailed (thousands)
1934	17,571	89.24	15,680	...
1933	17,210	89.82	15,457	15,279
1932	17,063	88.82	15,156	15,016
1931	17,609	86.79	15,284	14,975
1930	17,564	83.77	14,714	14,528
1929	16,608	88.65	14,722	14,888
1928	15,534	86.09	13,373	13,856
1927	14,832	86.76	12,869	13,179
1926	13,948	84.57	11,795	12,070

The number of breeding-ewes, which in 1932 declined for the first time since 1920, shows a further recovery. The lambing percentage has fallen slightly. The estimated number of lambs has reached a further maximum.

The lambing percentage is this season higher in the South Island than in the North Island. The North Island has the larger sheep population.

International trade in butter in 1934.

International trade in butter increased in 1934 with respect to the previous year, even exceeding the 1931 record.

Exports of the European surplus-producing countries, which had fallen off since 1930, contributed largely to the growth in total volume of the trade; those of overseas countries, which have increased steadily for several years, showed a further rise in 1934.

Amongst European countries the Netherlands, the Irish Free State, Sweden and Poland have been able to increase their shipments abroad while the exports of Denmark and the Baltic States remained at practically the same level as last year.

Of the extra-European countries only Australia records larger exports than in 1933 and preceding years; the exports of New Zealand remained very near the maximum of 1933; those of Argentina underwent a further reduction.

Export of butter from the principal exporting countries

(thousand pounds).

COUNTRIES	1934	1933	1932	1931	1930	1929	1928
Denmark	330,311	332,269	347,886	378,429	372,558	350,620	325,714
Netherlands	81,320	62,552	44,924	72,660	92,394	104,325	103,488
Irish Free State	56,886	45,232	36,932	42,307	58,767	62,797	62,623
Sweden	51,152	37,759	29,866	43,045	58,806	54,961	38,680
Finland	24,467	26,202	32,020	38,367	37,726	36,610	29,489
Estonia	22,306	20,336	27,626	31,844	31,010	27,247	24,740
Latvia	34,615	34,494	41,002	41,313	40,631	32,695	28,673
Lithuania	21,321	21,120	21,885	19,191	16,219	9,004	5,827
Poland	9,782	3,547	2,707	27,470	26,714	33,248	24,194
<i>Total Europe</i>	<i>632,160</i>	<i>583,511</i>	<i>584,846</i>	<i>694,626</i>	<i>734,825</i>	<i>711,507</i>	<i>643,428</i>
U. S. S. R. . . . .	...	82,023	68,198	68,024	23,197	55,934	71,891
New Zealand	292,834	295,143	244,780	222,718	211,034	185,226	162,351
Australia	246,784	211,532	229,059	191,016	126,601	102,914	112,813
Argentina	18,347	30,664	55,916	51,167	51,156	37,547	44,183
<i>Total, Overseas Countries</i>	<i>557,965</i>	<i>537,339</i>	<i>529,755</i>	<i>464,901</i>	<i>388,791</i>	<i>325,687</i>	<i>319,347</i>
GENERAL TOTAL { a)	...	1,202,873	1,182,799	1,227,551	1,146,813	1,093,128	1,034,666
b)	1,190,125	1,120,850	1,114,601	1,159,527	1,123,616	1,037,194	962,775

a) Including U. S. S. R. — b) Excluding U. S. S. R.

To the increase in total exports there corresponds a further increase in British imports, which have grown steadily from one year to another. In 1934 they exceeded those of 1933 by 10 % and those of 1928 by 61 %. Their proportion to the total imports of the countries included in the following table rose from 67 % in 1928 to 86 % in 1934.

The total imports of the other leading importing countries did not attain the 1933 figure and represented less than half the quantities annually purchased abroad from 1928 to 1931.

Import of butter into the principal importing countries

(thousand pounds).

COUNTRIES	1934	1933	1932	1931	1930	1929	1928
Great Britain and Northern Ireland 1) . . .	1,075,603	979,553	902,601	863,362	744,870	702,748	666,228
Germany	136,165	130,391	153,264	220,950	293,562	298,824	279,003
Belgium-Luxemburg . . .	20,629	27,408	46,928	41,562	22,635	9,559	2,899
France	9,603	20,307	26,140	40,836	12,924	9,753	5,758
Switzerland	653	1,146	8,151	23,358	18,797	16,649	18,063
Canada	2,873	1,378	238	2,822	38,605	35,929	16,801
TOTAL . . .	1,245,526	1,160,183	1,137,322	1,192,890	1,131,393	1,073,462	988,752

1) Re-exports have been deducted. .

The growth of world exports has occurred only by virtue of the continued decline of prices under the influence of the very acute competition between the different surplus-producing countries. Thus the prices at which butter could be placed on the principal market were appreciably smaller in 1934 than in 1933 and the preceding years. In fact the average prices of butter imported into the United Kingdom, according to the monthly statistics of the trade of that country and reduced to gold francs on the basis of the sterling rate on Zürich, so as to eliminate the oscillations due to variation in the value of sterling in the period considered, are as follows:

Average annual price of butter imported into the United Kingdom
(in gold francs per quintal).

Year	Danish butter	New Zealand butter	Average of all butters
1913	310	267	289
1928	458	415	423
1929	445	429	425
1930	366	342	341
1931	296	261	267
1932	189	183	176
1933	145	138	132
1934	121	114	106

For imported butter as a whole the average price in 1934 shows a fall of 20 % with respect to 1933 and represents only a quarter of the 1929 price and little more than a third of the 1913 price.

The following table shows also that, as in previous years, the price in each month of 1934 was inferior to that in the corresponding month of 1933.

Average monthly price of butter imported into the United Kingdom
(in gold francs per quintal).

Month	1931	1932	1933	1934
January	289	185	144	109
February	306	195	141	104
March	315	205	131	107
April	286	198	118	102
May	274	174	124	103
June	276	166	125	100
July	272	167	117	97
August	274	167	129	104
September	—	174	140	109
October	236	167	144	100
November	221	163	147	118
December	193	151	129	118

It is well-known that the Governments of most exporting countries have taken measures to compensate their producers directly or indirectly for the low prices at which they must market their export surplus and that these measures very often lead to a rise in price on the internal markets.

It may therefore be interesting to compare the prices of butter within certain exporting countries with those of butter imported into the United Kingdom from the same countries.

Average prices of butter in 1934 in gold francs per quintal.

	Wholesale prices in exporting country	Import price in United Kingdom
Danish.	(1) 150	118
Latvian	(Riga) 192	83
Lithuanian	(Kaunas) 165	88
Dutch	(Zutphen) 300	98
Swedish	(Malmö) 185	94

(1) Average January-November.

These comparisons naturally give only a very rough indication in view of the different character of the prices considered but the very appreciable margin that they reveal sheds a light on the chaos existing in the international trade in butter.

Current information on livestock and derivatives.

Irish Free State: The yield of milk was above normal for the season.

France: The general condition of livestock, favoured by the mild winter and abundant feed, is excellent in almost all areas. The animals are very numerous, owing to the generally difficult market conditions; prices fell heavily in November and December, especially for pigs, and are extremely low. The economic position of livestock is distinctly bad; in relation to the average of January 1934 the fall on the La Villette market was 14 % to 22 % for oxen and cows, according to quality, 25 % for calves, only 10 % to 13 % for sheep and 37 % to 40 % for pigs.

Great Britain and Northern Ireland: Supplies of winter keep have not been drawn upon unduly and there is now a good prospect that these supplies will prove sufficient until the spring. In many districts in Scotland, however, supplies of fodder will be very short before the grazing season commences. Supplies of feeding stuffs, however, are ample.

Milk yields in most parts are normal.

In England and Wales, the health and condition of ewes is generally reported to be good and lambing prospects appear to be favourable. Except in East Anglia and the southern counties lambing has not generally commenced. The early lambs look to be strong and healthy and the ewes appear to be giving sufficient milk.

Hungary: Toward the middle of February it was reported that available supplies of fodder would suffice for the winter if a certain economy was observed in distribution. Only in a few counties was scarcity reported and this has been eliminated by purchases other parts of the country.

Netherlands: In February feeding of dairy cows was very satisfactory. Concentrated feeds were only rarely used owing to high prices but the animals were able to find fairly good feed on ensilage, supplemented where necessary by dried sugar-beet pulp, potatoes and turnips and sometimes by skimmed milk. Hay, though of excellent quality, is not plentiful. Forecasts of the feed situation are in general fairly good. Milk production increased in January in Groningen to almost 5 % above normal, in Friesland to 5 % above the January level and in Drenthe, Overijssel and Zeeland to a little less. On the other hand they diminished in Limburg by 5 % and in the clayey areas of North-Brabant by 5-10 %. In other provinces milk production was practically normal.

The Central Dairy Marketing Organization has published preliminary figures of the average weekly production and consumption of butter and of the consumption of margarine during recent years. In order to increase the consumption of butter, margarine (except in special cases) has to be mixed with products of milk from cows. Below will be found weekly averages of total consumption of pure butter, of butter included in margarine and finally, consumption of margarine and butter mix in thousands of pounds:—

	Production of butter	Consumption of butter in pure form	Consumption of butter included in margarine	Consumption of margarine and butter mix.
3rd quarter 1932 . . . . .	...	...	593	2,377
4th " "	2,824	1,775	545	2,233
1st " 1933	2,590	1,726	547	2,288
2nd " "	4,411	1,709	985	2,566
3rd " "	3,940	1,704	589	2,458
4th " "	2,776	1,680	569	2,474
Year 1933	3,430	1,704	672	2,447
1st quarter 1934	2,617	1,585	549	2,421
2nd " "	4,504	1,750	549	2,434
3rd " "	3,999	1,737	571	2,498
4th " "	2,908	1,669	545	2,441
Year 1934	3,508	1,687	553	2,447

United States: The number of cattle on feed in the Corn Belt States on 1 January 1935 was 46 % smaller than the number on feed a year ago according to the estimate prepared by the Bureau of Agricultural Economics. This is much the largest decrease from the previous year shown in the 13 years for which similar estimates have been made. The number of cattle on feed on 1 January this year is the smallest for many years.

There were wide variations among the States in the percentage change from the previous year, these ranging from decreases of 80 and 65 %, respectively, in Kansas and Missouri to increases of 5 and 15 %, respectively, in Ohio and Indiana. For the States East of the Mississippi River, as a whole, there was a decrease of 7 %, while for the States west of that river the decrease was 57 %.

The number of cattle on feed in the 11 Western States on 1 January this year was estimated as 16 % smaller than a year earlier, with decreases in nearly all of the States. In Texas and Oklahoma the total number on feed this year is only about one half as large as a year ago.

There was a decrease of about 5 % in the number of lambs (including sheep) on feed for market on 1 January 1935, compared with the number a year earlier, in the principal feeding States. The estimated number this year was 4,915,000 head. The revised estimate for 1 January 1934 was 5,189,000 head; for 1 January 1933 it was 5,701,000 head; and for 1 January 1932 (the largest number on record), it was 6,160,000 head. The number this year was the smallest since 1 January 1929.

The decrease this year from last was in the number on feed in the Western States, the number in the Corn Belt States remaining unchanged. There was considerable variation, however, in the changes in the number on feed this year from last in the different Corn Belt States, some showing sharp increases and others similar decreases.

Algeria: Owing to the severe cold which prevailed at the end of January, stock-raising conditions, which up to this period had been good, became more precarious. There is a possibility of a fairly appreciable mortality among young animals. Pastures could not be used owing to snow or excessive rainfall. Grazing lands, however, notwithstanding the setback in growth, were fairly well supplied. Animals were in fairly good condition and were able to withstand the severe winter. Thus, with a return of fine weather and in spite of the cold, the situation is likely to improve fairly quickly.

French Morocco: Owing to the dry and cold weather which prevailed between the end of December and 20 January vegetation on the grazing lands showed little growth in the coastal areas and in East Morocco, where the condition of cattle was rather mediocre. The influence of these unfavourable conditions was less marked in the central areas, and grazing lands are providing an adequate amount of food and animals are quickly getting into better condition. A change in the weather occurred at the end of January and adequate rains fell in all parts of the country.

Union of South Africa: Except in a few isolated areas there is an abundance of grazing throughout the Union, and stock was in excellent condition in December; it was feared, however, that the veld would soon become too rank for sheep.

TRADE

COUNTRIES	DECEMBER				FIVE MONTHS (August 1-Dec. 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1934	1933	1934	1933	1934	1933	1934	1933	1933-34	1933-34

Wheat. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Bulgaria	0	368	0	0	0	1,477	0	0	2,242	0
Hungary	606	840	0	0	2,705	8,153	0	0	15,496	0
Lithuania	22	0	0	0	55	0	0	0	0	0
Poland	7	20	4	121	298	150	9	474	1,596	501
Rumania . . . . .	...	...	...	...	1,834	209	2	0	141	17
Yugoslavia	324	0	0	0	...	...	...	...	553	0
U. S. S. R. . . . .	...	...	...	...	...	...	...	...	18,975	...
Canada	10,401	10,474	0	0	54,128	55,336	0	0	101,960	7
United States	35	2,491	1,440	511	1,312	2,853	7,328	2,961	11,995	6,404
Argentina	6,341	3,433	...	...	42,744	22,284	...	...	84,074	...
Chile . . . . .	...	...	...	...	465	0	0	582	582	765
Syria and Lebanon	15	26	0	35	176	335	9	110	423	198
Algeria	412	562	40	26	3,704	3,117	161	183	6,493	340
French Morocco . . . . .	...	...	...	...	1,583	2,147	0	0	5,082	0
Tunis . . . . .	...	...	...	...	606	470	139	434	1,124	1,122
Australia	3,845	2,987	0	0	16,885	13,649	0	0	36,090	0
New Zealand	0	...	...	...	...	181	4	55	181	119
<i>Importing Countries:</i>										
Germany	0	1,830	633	1,415	115	8,534	4,473	7,297	12,516	17,163
Austria	0	0	324	324	0	0	1,773	1,572	0	4,866
Belgium	245	229	2,355	2,463	787	606	12,888	11,188	1,459	26,226
Denmark	2	0	1,396	522	29	9	4,641	3,521	9	6,764
Spain	0	0	0	0	0	0	0	0	0	0
Estonia	0	0	0	0	0	0	0	0	0	0
Irish Free State	0	0	1,087	635	0	0	4,383	4,092	0	10,280
Finland	0	0	143	73	0	0	580	452	0	1,098
France	2,414	2	1,365	1,499	7,097	1,327	7,516	8,223	1,905	16,493
Gr. Brit. and N. Irel.	40	31	10,007	9,173	423	216	48,083	52,949	754	120,064
Greece	0	0	527	306	0	0	2,573	3,139	0	6,285
Italy	0	0	915	701	9	7	3,580	3,164	7	9,908
Latvia	29	0	0	0	53	0	0	0	0	0
Norway	0	0	355	181	0	0	1,499	1,590	0	3,761
Netherlands	0	0	1,054	511	4	7	4,841	7,597	1,303	13,649
Portugal . . . . .	...	...	11	33	...	...	82	110	...	384
Sweden	0	0	82	68	157	0	439	518	375	1,089
Switzerland	0	0	1,173	833	2	4	4,713	5,108	7	10,558
Czechoslovakia	0	0	40	0	...	...	44	82	4	88
China . . . . .	...	...	...	...	128	35	487	1,404	185	11,200
India	9	9	0	0	223	24	0	99	44	165
Japan . . . . .	...	...	1,281	582	...	...	4,409	3,433	...	9,811
Egypt	0	2	2	0	2	7	112	2	9	7
Union of South Afr. . . . .	...	...	...	...	0	0	509	11	0	33
Totals	24,747	23,304	24,234	20,012	135,576	121,212	115,277	120,358	305,584	279,365

Rye. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Germany	0	811	368	121	46	4,623	831	1,878	6,945	2,196
Bulgaria	0	0	0	0	0	13	0	0	18	0
Estonia	0	0	0	0	494	0	22	0	0	0
Hungary	42	205	0	0	403	1,905	0	0	3,455	0
Latvia	390	0	0	0	1,032	0	0	0	0	0
Lithuania	130	0	0	0	278	13	0	0	49	0
Poland	893	780	0	62	4,422	4,874	0	220	10,479	229
Rumania . . . . .	...	...	...	...	0	0	0	0	0	0
Sweden	520	0	2	4	1,616	0	9	20	42	31
U. S. S. R. . . . .	...	...	...	...	...	...	...	...	3,316	...
Canada	33	0	7	0	384	1,424	9	0	1,444	0
Argentina	139	31	0	0	1,307	1,155	...	...	2,178	...
Algeria	2	2	0	0	22	13	0	0	22	0
<i>Importing Countries:</i>										
Austria	0	0	243	0	0	0	710	2	0	172
Belgium	0	0	179	611	0	11	999	2,974	11	4,804
Denmark	0	0	326	534	2	0	1,958	3,796	0	5,895
Finland	0	0	4	13	0	0	77	366	0	1,173
France	0	0	4	9	0	0	29	57	0	71
Italy	0	0	11	13	0	0	31	40	0	126
Norway	0	0	234	170	0	0	1,168	1,340	0	3,201
Netherlands	2	0	126	492	227	7	580	1,768	7	5,110
Switzerland	0	0	11	49	0	0	51	62	0	137
Czechoslovakia	0	0	2	2	2	13	11	9	18	20
United States	0	0	75	648	0	4	1,488	4,275	9	7,055
Total	2,151	1,829	1,592	2,728	10,235	14,055	7,973	16,807	27,993	30,220

COUNTRIES	DECEMBER				FIVE MONTHS (August 1-Dec. 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1934	1933	1934	1933	1934	1933	1934	1933	1933-34	1933-34
Wheat flour. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Germany	11	622	13	7	558	2,165	33	33	5,578	55
Bulgaria	0	13	0	0	0	55	0	0	93	0
Spain	0	4	0	0	0	18	0	0	31	0
France	589	456	115	73	2,163	1,933	778	359	4,149	937
Hungary	104	112	0	0	388	744	0	0	1,466	0
Italy	511	414	20	35	1,898	1,704	55	183	3,849	320
Lithuania	0	2	0	0	0	15	0	0	22	0
Poland	46	9	0	0	139	60	0	0	282	0
Rumania . . . . .	...	...	...	...	1) 7	1) 7	1) 0	1) 0	7	0
Yugoslavia	2	4	0	0	22	24	0	0	55	0
Canada	668	820	20	9	4,140	4,925	218	44	10,690	176
United States	617	761	0	0	3,858	3,292	0	0	7,584	2
Argentina	157	243	—	—	946	959	—	—	2,425	—
Chile . . . . .	...	...	...	...	35	2) 0	2) 37	2) 4	22	55
India	22	26	0	0	119	119	2	0	260	2
Japan	780	626	7	2	3,067	2,780	11	11	5,569	22
Algeria	57	53	9	9	403	302	42	37	897	101
French Morocco . . . . .	...	...	...	...	9	0	0	0	2	49
Tunis . . . . .	...	...	...	...	342	53	9	18	223	249
Australia	915	1,089	0	0	6,091	4,497	0	0	10,922	0
<i>Importing Countries:</i>										
Austria	0	0	73	71	0	0	223	346	0	992
Belgium	2	0	22	29	18	22	73	128	42	287
Denmark	0	0	35	37	9	7	231	337	13	584
Estonia	0	0	0	0	0	0	0	0	0	0
Irish Free State	0	0	62	73	0	0	298	732	0	1,091
Finland	0	0	37	77	0	0	328	459	0	1,146
Gr. Brit. and N. Irel.	313	227	840	933	1,545	1,475	4,081	5,154	3,245	11,674
Greece	0	0	9	2	0	2	13	9	0	13
Norway	0	0	150	22	2	2	536	443	4	930
Netherlands	0	0	88	55	2	2	395	419	7	880
Portugal	—	—	11	13	—	—	53	73	—	143
Sweden	0	0	0	0	0	0	0	2	0	4
Czechoslovakia	0	0	4	2	2	4	11	13	7	22
Ceylon	—	—	29	31	—	—	159	163	—	386
China . . . . .	...	...	...	...	55	31	538	511	165	1,314
Java and Madura . . . . .	...	...	...	...	—	—	384	401	—	1,087
Indo-China . . . . .	—	—	...	...	—	—	119	106	—	337
Syria and Lebanon	7	2	9	49	22	51	35	320	77	888
Egypt	0	0	9	9	0	0	35	46	0	99
Union of South Afr. . . . .	...	...	...	...	0	0	4	2	2	9
New Zealand . . . . .	...	...	...	...	0	0	73	66	2	209
Totals	4,801	5,487	1,562	1,538	25,833	25,318	8,774	10,421	57,737	24,023
Barley. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Bulgaria	0	53	0	0	0	269	0	0	522	0
Spain	0	4	0	0	0	42	0	0	44	0
Hungary	2	119	11	0	73	833	22	0	1,093	0
Poland	785	434	0	0	4,125	1,817	0	0	3,538	0
Rumania . . . . .	...	...	...	...	2,965	9,332	0	2	14,654	4
Czechoslovakia	146	77	...	0	807	754	0	2	1,116	2
Yugoslavia	51	20	0	0	421	128	0	0	176	0
U. S. S. R. . . . .	...	...	...	...	...	...	...	...	12,500	—
Canada	1,184	119	0	0	4,978	324	0	0	820	0
United States	51	64	897	0	1,301	1,217	3,003	11	2,531	152
Argentina	174	366	—	—	1,376	1,237	—	—	11,605	—
Chile . . . . .	...	...	...	...	650	229	0	0	2,006	0
India	24	0	0	9	256	2	0	42	2	95
Algeria	99	128	46	49	946	511	487	403	1,144	496
Egypt	0	4	2	0	0	119	4	0	139	0
French Morocco . . . . .	...	...	...	...	3,347	1,479	0	0	2,628	0
Australia	104	137	0	0	428	459	0	0	1,407	0
<i>Importing Countries:</i>										
Germany	0	0	1,784	979	0	0	7,300	2,778	2	7,648
Austria	0	0	205	168	0	0	882	842	0	2,588
Belgium	46	4	765	763	258	348	4,246	4,927	655	8,962
Denmark	84	64	84	154	1,131	414	551	714	977	1,314
Irish Free State	0	0	0	0	0	11	2	68	11	212
France	2	2	355	364	2	0	1,883	2,414	0	3,915
Gr. Brit. and N. Irel.	0	0	1,087	1,867	4	7	8,144	10,979	26	20,322
Greece	0	0	2	0	0	0	4	2	0	4
Italy	0	0	152	82	0	0	681	375	0	1,124
Norway	0	0	15	15	0	0	101	198	0	293
Netherlands	20	0	463	591	150	0	2,643	6,490	26	11,543
Switzerland	0	0	333	317	0	0	1,424	957	0	2,412
Syria and Lebanon	13	0	22	108	73	49	35	179	79	216
Tunis . . . . .	...	...	...	...	18	46	719	134	84	602
Totals	2,785	1,595	6,223	5,466	23,312	10,627	33,121	31,558	55,885	11,322

COUNTRIES	DECEMBER				FIVE MONTHS (August 1-Dec. 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1934	1933	1934	1933	1934	1933	1934	1933	1933-34	1933-34
Oats. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Irish Free State	0	7	0	0	0	15	0	0	20	0
Hungary	0	82	0	0	0	560	0	0	761	0
Lithuania	2	0	0	0	2	0	0	0	2	0
Poland	68	13	0	0	315	57	0	0	304	0
Rumania	...	...	...	...	0	434	0	0	505	0
Czechoslovakia	0	104	0	0	2	516	0	0	741	0
Yugoslavia	20	0	0	0	225	33	0	0	112	0
Canada	602	196	0	0	2,460	644	0	0	2,070	2
United States	2	4	772	0	13	93	1,596	15	123	71
Argentina	974	527	—	—	6,495	2,469	—	—	7,053	—
Chile	...	...	...	...	425	108	0	0	1,530	0
Tunis	...	...	...	...	262	13	0	4	86	22
Australia	7	2	0	0	57	11	0	0	33	2
<i>Importing Countries:</i>										
Germany	2	351	423	13	11	1,453	1,003	66	1,931	97
Austria	0	0	7	2	0	0	46	97	0	450
Belgium	0	0	4	0	0	0	37	29	0	390
Denmark	40	4	71	2	478	13	364	187	26	373
Estonia	0	0	0	0	0	0	0	0	0	0
Finland	0	2	0	44	0	2	11	254	9	549
France	2	0	15	22	7	2	198	152	179	238
Gr. Brit. and N. Irel.	0	2	209	692	7	7	1,144	2,458	20	4,894
Italy	0	0	423	181	0	0	1,964	866	0	2,811
Latvia	0	0	0	0	0	0	0	0	0	2
Norway	0	0	0	0	0	0	0	0	4	2
Netherlands	0	4	64	64	0	7	306	527	20	1,142
Sweden	0	0	7	119	18	0	13	586	9	915
Switzerland	0	0	529	503	0	0	2,094	1,722	0	4,780
Algeria	13	2	22	29	79	40	66	93	64	282
Totals	1,732	1,300	2,546	1,671	10,856	6,477	8,842	7,056	15,602	17,022
Maize. — Thousand centals (1 cental = 100 lb.).										
					TWO MONTHS (November 1-Dec. 31)				TWELVE MONTHS (Nov. 1-Oct. 31)	
<i>Exporting Countries:</i>										
Bulgaria	251	97	0	0	328	115	0	0	2,564	0
Hungary	15	183	0	0	37	478	0	0	1,056	0
Rumania	...	...	...	...	1,792	432	0	0	10,115	0
Yugoslavia	2,533	880	0	0	4,689	1,653	0	0	11,810	0
United States	62	205	657	9	161	888	919	24	2,401	763
Argentina	8,173	14,275	—	—	17,044	24,621	—	—	127,357	—
Java and Madura	...	...	—	—	13	95	—	—	924	—
Indo-China	...	...	—	—	1,636	730	—	—	8,439	—
Syria and Lebanon	0	0	0	2	0	0	0	4	0	66
Egypt	0	0	7	0	0	2	7	2	2	20
Union of South Afr.	798	0	...	...	1,323	0	0	0	3,693	432
<i>Importing Countries:</i>										
Germany	0	0	1,153	373	0	0	2,028	911	0	7,452
Austria	0	0	1,263	880	0	2	2,284	1,799	2	10,448
Belgium	22	40	1,321	1,645	223	88	2,377	2,630	822	16,824
Denmark	0	0	437	229	0	0	875	675	0	4,586
Spain	0	0	57	683	0	0	157	705	0	1,307
Irish Free State	0	0	322	174	0	0	944	384	0	6,543
Finland	0	0	31	146	0	0	55	282	0	1,312
France	0	2	1,521	1,376	0	4	3,289	2,928	22	13,607
Gr. Brit. and N. Irel.	168	148	5,344	5,284	364	220	12,278	9,502	2,116	66,597
Greece	0	0	42	9	0	0	62	13	0	37
Italy	0	0	161	207	2	0	249	514	2	3,874
Norway	0	0	220	359	0	0	474	661	0	3,084
Netherlands	0	0	1,709	2,127	0	0	3,638	3,664	13	22,011
Poland	0	0	0	7	0	0	0	11	0	60
Portugal	—	—	110	123	—	—	220	247	—	1,669
Sweden	0	0	22	368	0	0	108	866	0	3,106
Switzerland	0	0	150	106	0	0	342	236	0	1,792
Czechoslovakia	0	0	216	271	0	0	346	787	0	5,150
Canada	0	0	564	388	0	0	1,349	776	2	4,090
Japan	—	—	0	0	—	—	0	2	—	2
Tunis	...	...	...	...	0	0	15	0	4	101
Totals	12,022	15,830	15,307	14,766	27,612	29,326	32,016	27,623	171,344	174,935

COUNTRIES	DECEMBER				TWELVE MONTHS (January 1-Dec. 31)				TWELVE MONTHS (January 1-Dec. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1934	1933	1934	1933	1934	1933	1934	1933	1933	1933
Rice. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Spain	66	4	0	0	1,010	190	0	0	—	—
Italy	522	399	9	7	3,598	4,308	44	115	—	—
United States	57	99	51	26	917	1,365	558	302	—	—
Brazil	...	...	—	—	2) 518	2) 401	—	—	—	—
India	1,259	1,653	1,362	132	31,244	41,295	8,858	772	—	—
Indo-China	...	...	—	—	1) 25,192	1) 26,105	—	—	—	—
Siam	3,964	2,520	—	—	42,959	35,265	—	—	—	—
Egypt	137	322	0	0	1,508	2,127	9	9	—	—
<i>Importing Countries:</i>										
Germany	66	33	507	452	745	816	6,341	6,775	—	—
Austria	0	0	62	53	0	0	633	608	—	—
Belgium	9	11	115	75	97	84	1,446	1,276	—	—
Denmark	0	0	13	26	0	0	137	176	—	—
Estonia	—	—	0	0	—	—	15	11	—	—
Irish Free State	0	0	7	7	0	0	57	53	—	—
France	33	22	919	893	661	772	14,171	12,544	—	—
Gr. Brit. and N. Irel.	11	7	82	93	174	168	2,862	2,352	—	—
Greece	—	—	44	42	—	—	313	450	—	—
Hungary	0	0	99	60	0	0	448	483	—	—
Latvia	0	0	4	0	0	0	11	29	—	—
Lithuania	0	0	0	0	0	0	15	18	—	—
Norway	0	0	7	9	0	0	106	77	—	—
Netherlands	280	79	75	86	2,013	1,281	3,629	3,483	—	—
Poland	13	33	2	0	157	203	974	1,415	—	—
Portugal	—	—	18	71	—	—	575	723	—	—
Sweden	—	—	9	0	—	—	223	104	—	—
Switzerland	0	0	42	51	0	0	397	575	—	—
Czechoslovakia	0	0	168	132	0	0	1,497	1,292	—	—
Yugoslavia	0	0	71	37	0	0	439	536	—	—
Canada	0	0	29	15	4	18	732	620	—	—
Chile	—	—	...	...	—	—	2) 251	2) 137	—	—
Ceylon	0	0	1,036	937	4	4	10,977	10,119	—	—
China	...	...	...	...	1) 146	1) 79	15,770	1) 26,989	—	—
Java and Madura	...	...	...	...	1) 130	1) 150	633	2,346	—	—
Japan	22	15	0	0	1,457	362	152	3,142	—	—
Syria and Lebanon	0	0	66	33	0	0	428	397	—	—
Algeria	0	0	20	20	9	18	355	220	—	—
Tunis	...	...	...	...	1) 0	1) 0	55	24	—	—
Union of South Afr.	...	...	...	...	1) 0	1) 0	1,107	966	—	—
Australia	11	9	2	2	244	174	49	51	—	—
New Zealand	...	...	...	...	1) 0	1) 0	71	68	—	—
Totals	6,450	5,206	4,819	3,259	112,787	115,185	74,338	79,257	—	—
Linseed. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Lithuania	31	33	0	0	141	132	0	0	—	—
Argentina	3,538	2,945	—	—	30,300	30,695	—	—	—	—
India	328	972	0	0	6,175	7,782	0	0	—	—
Tunis	...	...	...	...	1) 0	1) 2	2) 0	2) 0	—	—
<i>Importing Countries:</i>										
Germany	0	0	271	448	2	29	6,986	7,899	—	—
Belgium	4	4	181	161	68	68	1,790	2,754	—	—
Denmark	—	—	24	35	—	—	359	428	—	—
Spain	—	—	71	24	—	—	366	359	—	—
Estonia	2	0	0	4	15	0	4	29	—	—
Finland	0	0	7	9	0	0	104	88	—	—
France	0	0	287	357	7	7	5,243	5,807	—	—
Gr. Brit. and N. Irel.	0	0	165	494	15	4	4,123	5,569	—	—
Greece	0	0	9	11	0	0	112	134	—	—
Hungary	2	2	0	0	13	7	0	31	—	—
Italy	0	0	82	141	0	0	1,422	1,653	—	—
Latvia	42	35	7	18	79	75	86	106	—	—
Norway	0	0	11	22	0	0	337	412	—	—
Netherlands	4	2	877	159	77	44	7,108	6,512	—	—
Poland	0	0	0	0	0	2	170	287	—	—
Sweden	—	—	24	29	—	—	849	776	—	—
Czechoslovakia	0	0	71	29	—	2	556	423	—	—
Yugoslavia	0	0	4	0	0	0	139	90	—	—
Canada	0	0	0	20	4	344	443	84	—	—
United States	—	—	1,021	271	—	—	7,934	7,743	—	—
Japan	0	0	29	53	2	0	434	472	—	—
Australia	0	0	11	7	0	0	560	487	—	—
Totals	3,951	3,993	3,152	2,292	36,898	39,193	39,127	42,143	—	—

1) 2) See notes page 154.

COUNTRIES	DECEMBER				TWELVE MONTHS (January 1- Dec. 31)				TWELVE MONTHS (January 1-Dec. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1934	1933	1934	1933	1934	1933	1934	1933	1933	1933
Butter. — (Thousand lb.).										
<i>Exporting Countries:</i>										
Austria	1,243	412	2	2	7,053	2,606	157	161	—	—
Denmark	24,773	26,098	0	0	330,311	332,269	20	553	—	—
Estonia	1,142	860	0	0	22,306	20,336	0	4	—	—
Irish Free State	847	276	2	0	56,886	45,232	84	22	—	—
Finland	1,834	1,828	0	31	24,467	26,202	13	1,407	—	—
Hungary	423	677	0	0	8,790	8,038	0	0	—	—
Latvia	2,041	1,581	0	0	34,615	34,494	0	0	—	—
Lithuania	981	1,045	0	0	21,321	21,120	0	0	—	—
Norway	90	132	0	0	547	904	2	141	—	—
Netherlands	5,551	3,168	218	146	81,320	62,552	1,173	1,448	—	—
Poland	82	165	0	0	9,782	3,547	9	24	—	—
Sweden	3,547	3,578	0	0	51,152	37,759	4	73	—	—
U. S. S. R.	—	—	—	—	26,707	18,422	—	—	—	—
Argentina	3,188	3,829	—	—	18,347	30,664	—	—	—	—
India	22	37	88	51	209	223	642	527	—	—
Syria and Lebanon	0	9	84	0	293	192	809	1,755	—	—
Australia	27,300	32,254	0	0	246,784	211,532	2	2	—	—
New Zealand	21,244	35,955	—	—	292,834	295,143	—	—	—	—
<i>Importing Countries:</i>										
Germany	0	0	21,458	13,325	9	20	136,165	130,391	—	—
Belgium	7	7	2,339	2,937	108	725	20,629	27,408	—	—
Spain	0	2	4	2	15	22	143	15	—	—
France	582	547	117	2,145	7,297	6,828	9,603	20,307	—	—
Gr. Brit. and N. Irel.	776	829	79,190	91,510	12,635	10,840	1,086,713	989,145	—	—
Greece	—	—	77	75	—	—	690	604	—	—
Italy	18	46	121	719	276	833	3,799	4,698	—	—
Switzerland	0	0	7	150	0	2	653	1,146	—	—
Czechoslovakia	0	0	225	333	22	110	2,229	1,495	—	—
Canada	33	77	13	4	428	4,438	2,873	1,378	—	—
United States	75	234	234	60	1,321	1,268	1,107	1,021	—	—
Ceylon	—	—	55	62	—	—	681	642	—	—
Java and Madura	—	—	—	—	—	—	1) 9,356	1) 9,215	—	—
Japan	—	—	11	15	—	—	64	236	—	—
Algeria	0	2	430	377	7	18	4,791	4,120	—	—
Egypt	7	9	99	64	82	254	789	721	—	—
Tunis	—	—	—	—	1) 18	1) 4	1) 1,975	1) 1,508	—	—
Totals	95,806	113,657	104,774	112,008	1,255,942	1,176,597	1,285,175	1,200,167		
Cheese. — (Thousand lb.).										
<i>Exporting Countries:</i>										
Bulgaria	287	223	0	0	2,652	2,579	0	0	—	—
Denmark	1,367	1,978	7	7	13,891	22,220	73	77	—	—
Finland	968	840	4	7	8,523	9,207	40	33	—	—
Italy	4,381	5,157	580	589	55,283	52,779	10,190	9,952	—	—
Lithuania	432	134	0	0	2,200	1,662	2	4	—	—
Norway	295	146	33	29	4,418	3,818	214	192	—	—
Netherlands	10,368	9,312	66	73	134,892	140,902	1,455	809	—	—
Poland	802	57	22	40	3,926	540	531	421	—	—
Switzerland	2,606	2,895	474	492	39,143	45,347	5,353	3,779	—	—
Czechoslovakia	172	101	205	260	1,995	2,824	2,628	2,917	—	—
Yugoslavia	216	304	7	7	4,045	3,228	57	71	—	—
Canada	2,928	6,409	73	64	61,167	74,168	946	968	—	—
Australia	2,469	1,393	9	4	12,467	10,911	77	57	—	—
New Zealand	21,127	27,190	—	—	222,266	222,313	1) 0	1) 4	—	—
<i>Importing Countries:</i>										
Germany	243	351	6,790	6,310	2,114	3,876	74,488	90,923	—	—
Austria	395	258	148	134	3,860	4,736	1,720	2,094	—	—
Belgium	15	15	3,629	2,970	353	348	47,818	48,418	—	—
Spain	7	7	284	375	123	168	2,482	2,489	—	—
Irish Free State	31	7	4	4	514	68	64	346	—	—
France	2,714	2,242	3,060	3,148	25,973	25,034	35,173	46,105	—	—
Gr. Brit. and N. Irel.	591	395	24,544	28,684	5,968	6,149	334,718	340,417	—	—
Greece	9	192	82	20	1,144	1,444	295	732	—	—
Hungary	51	7	0	0	176	55	0	11	—	—
Portugal	—	—	117	84	—	—	525	529	—	—
Sweden	—	—	152	139	—	—	1,248	1,016	—	—
United States	148	101	3,565	4,524	1,512	1,420	47,532	48,398	—	—
India	0	0	112	101	2	2	1,135	1,069	—	—
Java and Madura	—	—	—	—	—	—	1) 1,526	1) 1,585	—	—
Syria and Lebanon	0	2	163	198	534	46	1,221	1,640	—	—
Algeria	13	7	1,019	882	117	121	11,288	10,776	—	—
Egypt	18	13	633	710	126	126	6,537	6,173	—	—
Tunis	—	—	—	—	1) 84	1) 64	1) 2,641	1) 2,432	—	—
Totals	52,653	59,736	45,782	49,855	609,468	636,155	591,977	624,437		

1) 2) 3) See notes page 154.

COUNTRIES	DECEMBER				FIVE MONTHS (August 1-Dec. 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1934	1933	1934	1933	1934	1933	1934	1933	1933-34	1933-34

Cotton. — Thousand centals (1 cental = 100 lb.).

<i>Exporting Countries:</i>										
United States . . .	2,723	4,449	51	71	13,137	22,573	243	282	40,971	747
Argentina . . .	29	11	—	—	309	161	—	—	450	—
Brazil . . .	—	—	—	—	972	77	—	—	1,305	—
India . . .	946	650	77	55	3,384	2,454	395	322	12,791	972
Egypt . . .	855	1,164	—	—	3,653	4,081	—	—	8,927	—
<i>Importing Countries:</i>										
Germany . . .	79	115	432	822	470	589	2,183	4,004	1,235	9,539
Austria . . .	2	0	68	68	4	0	289	298	2	666
Belgium . . .	68	44	196	126	278	225	873	743	553	1,768
Denmark . . .	—	—	15	15	—	—	90	82	—	190
Spain . . .	4	0	209	225	13	9	752	877	35	2,698
Estonia . . .	0	0	4	7	0	0	49	37	0	88
Finland . . .	0	0	44	18	2	0	159	110	2	249
France . . .	42	22	503	985	304	157	1,973	3,585	423	7,101
Gr. Brit. and N. Irel.	62	37	1,228	1,676	282	243	4,971	6,561	606	14,266
Greece . . .	0	0	11	9	0	0	53	55	0	163
Hungary . . .	0	0	37	42	0	0	214	209	0	509
Italy . . .	0	0	410	514	2	4	1,378	1,969	7	4,716
Latvia . . .	0	0	9	18	0	0	46	22	0	108
Norway . . .	0	0	75	99	2	7	370	390	7	988
Netherlands . . .	0	0	128	110	4	2	626	653	4	1,519
Poland . . .	0	0	60	57	—	—	187	201	—	498
Portugal . . .	—	—	79	35	—	—	276	225	—	661
Sweden . . .	—	—	60	73	—	—	238	251	0	597
Switzerland . . .	0	0	161	185	40	44	730	745	97	1,845
Czechoslovakia . . .	7	9	37	20	0	0	143	90	0	289
Yugoslavia . . .	0	0	187	198	—	—	528	694	—	1,506
Canada . . .	—	—	—	—	—	—	545	657	847	2,835
China . . .	—	—	1,872	1,470	187	419	6,570	5,803	384	17,163
Japan . . .	—	—	4	4	220	97	2	9	2	7
Algeria . . .	2	0	0	0	4	2	—	—	—	—
Totals . . .	4,819	6,501	5,965	6,911	23,267	31,142	24,009	28,925	68,648	71,741

Wool. = (Thousand lb.).

COUNTRIES	FOUR MONTHS (September 1-Dec. 31)				TWELVE MONTHS (Sept. 1-August 31)			
	1934	1933	1934	1933	1934	1933	1934	1933

Wool. greasy. b) = Wool scoured. — x) 2) See notes page 154.

<i>Exporting Countries:</i>								
Irish Free State . .	681	1,790	71	95	4,217	8,340	324	278
Hungary . . .	190	344	496	207	1,188	858	1,096	871
Argentina . . . { a)	24,690	46,848	—	—	51,630	85,114	—	—
Chile . . . { b)	2,767	1,865	—	—	6,973	5,232	—	—
India . . .	3,007	3,757	324	337	13,221	21,511	1,343	946
Syria and Lebanon . .	1,254	1,155	7	15	3,272	2,207	68	302
Algeria . . .	681	408	293	212	2,441	2,718	849	739
Egypt . . .	157	33	0	2	463	780	9	11
Un. of S. Africa . . { a)	22,359	31,158	—	—	61,408	105,467	0	0
Australia . . . { a)	624	586	—	—	1,777	2,251	280	399
New Zealand . . . { a)	109,217	107,848	198	926	329,998	420,994	785	1,755
— { b)	6,056	6,702	22	82	23,325	27,933	64	121
— { c)	6,997	18,270	—	—	11,352	29,895	0	0
— { d)	1,325	1,354	—	—	7,476	8,411	4	0
<i>Importing Countries:</i>								
Germany . . . { a)	732	97	14,420	25,805	4,383	783	40,570	64,435
Austria . . . { b)	198	628	4,319	5,913	974	3,563	19,147	19,147
Belgium . . . { a)	60	22	1,724	2,815	807	95	4,257	7,694
Denmark . . . { b)	8,834	10,644	21,861	22,948	24,538	39,007	47,931	60,647
Spain . . .	1,259	3,179	240	754	4,949	11,127	1,118	2,635
Finland . . .	57	29	381	377	152	93	1,980	2,006
France . . .	207	664	414	267	974	1,702	1,616	1,812
Greece . . .	51	2	295	335	99	9	1,770	1,865
Gr. Brit. and N. Irel.	3,598	5,717	25,153	37,388	15,276	20,377	63,083	101,043
Italy . . . { a)	19,842	37,893	77,294	93,126	68,974	110,412	178,028	226,852
Norway . . . { b)	35	172	421	148	371	300	1,907	1,045
Netherlands . . . { a)	86	40	1,127	4,251	233	231	7,251	20,188
Poland . . . { b)	364	381	668	1,956	831	1,235	3,620	7,275
Sweden . . .	194	146	104	128	534	571	690	780
Switzerland . . . { a)	836	833	542	1,034	2,068	1,889	1,779	2,762
Yugoslavia . . . { b)	161	115	730	613	701	604	2,388	2,992
Canada . . .	18	66	1,839	2,685	64	569	6,014	10,739
China . . .	—	—	1,131	1,733	—	—	5,926	6,449
Japan . . .	11	75	2,359	2,231	75	130	6,312	5,783
U.S.S.R. . .	259	249	2,414	3,516	847	897	8,406	10,040
U.S.S.R. . .	251	4	324	384	688	104	2,105	1,664
U.S.S.R. . .	337	414	608	1,532	2,438	6,334	2,158	5,721
U.S.S.R. . .	57	20	5,075	16,169	381	399	26,456	73,108
U.S.S.R. . .	0	0	21,422	33,063	71	132	54,351	75,187
Totals . . .	217,352	283,508	186,284	261,039	649,277	923,289	485,530	717,461

COUNTRIES	DECEMBER		SIX MONTHS (July 1-Dec. 31)		TWELVE MONTHS (July 1- June 30)	COUNTRIES	DECEMBER		SIX MONTHS (July 1-Dec. 31)		TWELVE MONTHS (July 1- June 30)
	1934	1933	1934	1933	1933-34		1934	1933	1934	1933	1933-34
Coffee. — (Thousand lb.).						Tea. — (Thousand lb.).					
EXPORTS.						EXPORTS.					
Exporting Countries:						Exporting Countries:					
Brazil . . . . .	...	...	2) 598,557	2) 726,130	2,097,337	Ceylon	16,436	16,782	98,642	89,969	210,494
India	373	833	2,399	4,398	20,565	China . . . . .	...	...	50,325	48,515	104,153
Java and Madura . . . . .	...	...	1) 37,459	1) 29,948	64,360	India	34,172	33,378	233,223	229,813	311,611
Importing Countries:						Importing Countries:					
Germany	4	55	57	148	234	Belgium	2	4	7	4	9
Belgium	15	7	79	104	284	Irish Free State	2	4	245	18	159
France	0	0	4	55	71	France	4	2	15	18	40
Gr. Britain and N. Ireland	1,005	1,993	7,300	15,027	33,217	Gr. Brit. and N. Irel.	3,221	4,182	34,004	45,545	78,736
Netherlands	1,232	1,261	6,292	7,207	18,470	Netherlands	9	13	60	66	146
Portugal	293	362	1,321	1,515	3,278	United States	33	46	437	238	1,706
Switzerland	75	15	463	190	351	Syria and Lebanon	9	0	9	0	2
Canada	7	2	31	26	57	Algeria	11	9	66	26	57
United States	2,002	2,584	7,185	13,186	25,212	Union of S. Africa . . . . .	...	...	20	9	18
Ceylon	0	0	2	2	7	Australia	44	82	425	582	928
Syria and Lebanon	0	0	0	0	2	New Zealand . . . . .	...	...	40	33	106
Australia	9	4	31	18	40	Totals	56,258	58,135	483,324	475,693	846,929
Totals	—	—	—	—	2,263,485						
IMPORTS.						IMPORTS.					
Importing Countries:						Importing Countries:					
Germany	30,847	22,037	171,033	146,136	307,398	Germany	981	966	5,840	5,589	10,415
Austria	1,321	1,215	6,704	6,036	11,244	Austria	126	104	470	386	728
Belgium	8,159	9,623	50,173	54,706	109,656	Belgium	49	57	245	251	534
Bulgaria	139	101	575	472	1,074	Denmark	60	174	525	694	1,230
Denmark	4,339	7,322	29,300	29,831	57,814	Spain	24	40	137	154	359
Spain	5,108	11,764	25,904	32,360	67,149	Estonia	7	4	33	42	66
Estonia	15	4	77	88	152	Irish Free State	1,620	1,903	12,401	12,639	23,464
Irish Free State	31	22	152	165	545	Finland	15	13	110	117	251
Finland	2,222	2,533	18,151	17,690	37,038	France	194	370	880	2,421	3,968
France	29,857	36,414	190,306	211,078	409,056	Gr. Britain and N. Ireland	57,768	57,896	313,075	275,982	470,574
Gr. Britain and N. Ireland	4,325	4,370	11,502	22,295	77,424	Greece	18	55	172	234	390
Greece	1,071	1,162	6,080	6,539	12,641	Hungary	35	55	344	247	381
Hungary	256	395	2,663	2,072	4,314	Italy	49	40	141	132	280
Italy	7,308	7,262	42,613	42,646	86,889	Latvia	4	9	33	26	51
Latvia	15	29	40	82	278	Lithuania	2	11	40	40	84
Lithuania	35	24	198	170	359	Norway	24	29	170	174	381
Norway	2,425	2,921	15,170	16,669	37,366	Netherlands	2,004	3,721	16,056	15,708	25,942
Netherlands	4,096	13,993	33,308	77,554	137,461	Poland	309	256	1,755	2,050	3,719
Poland	992	1,003	7,081	8,874	16,852	Portugal	37	84	201	256	478
Portugal	1,687	1,572	8,699	6,874	12,035	Sweden	79	57	454	430	884
Sweden	7,106	7,341	47,203	43,923	96,759	Switzerland	132	126	789	807	1,576
Switzerland	2,513	2,817	13,669	14,961	32,058	Czechoslovakia	132	108	653	514	902
Czechoslovakia	2,092	2,050	11,431	12,346	23,177	Yugoslavia	68	40	273	240	388
Yugoslavia	1,005	1,093	6,473	7,485	13,823	Canada	2,315	3,117	13,854	16,561	41,246
Canada	2,275	2,679	13,810	15,210	36,110	United States	5,016	7,670	43,716	54,997	87,691
United States	100,527	151,002	695,098	769,299	1,598,178	Chile . . . . .	...	...	615	456	2,156
Chile . . . . .	...	...	1,797	1,213	4,394	Syria and Lebanon	134	26	313	170	271
Ceylon	194	93	1,636	1,918	3,150	Algeria	527	315	2,136	2,125	3,863
Japan	620	567	3,276	2,959	6,124	Egypt	1,468	1,515	9,015	7,915	15,166
Syria and Lebanon	278	165	1,067	1,349	2,368	Tunis . . . . .	...	...	1,466	758	1,781
Algeria	2,721	2,454	15,095	15,402	29,518	Union of S. Africa . . . . .	...	...	5,490	5,558	11,636
Egypt	1,457	1,887	7,502	10,518	17,604	Australia	4,231	2,549	23,598	24,396	46,260
Tunis . . . . .	...	...	1,497	1,360	3,344	New Zealand . . . . .	...	...	3,611	4,949	11,407
Un. of S. Africa . . . . .	...	...	10,767	12,677	29,313						
Australia	152	278	1,049	1,949	5,057						
New Zealand . . . . .	...	...	112	220	492						
Exporting Countries:						Exporting Countries:					
India	0	0	0	0	2	China	351	324	284	331	677
						India . . . . .	...	...	2,006	3,433	4,414
						Java and Madura . . . . .	...	...	957	913	2,019
Totals	225,188	296,192	1,451,211	1,595,126	3,288,216	Totals	77,779	81,634	461,858	441,695	775,632

1) 2) See notes page 154.

COUNTRIES	DECEMBER		THREE MONTHS (Oct. 1-Dec. 31)		TWELVE MONTHS (Oct. 1-Sept. 30)	COUNTRIES	DECEMBER		FIVE MONTHS (Aug. 1-Dec. 31)		TWELVE MONTHS (August 1-July 31)
	1934	1933	1934	1933	1933-34		1934	1933	1934	1933	1933-34
Cacao. — (Thousand lb.).						Total Wheat and Flour *)					
EXPORTS.						(Thousand centsals).					
<i>Exporting Countries:</i>						<i>a) NET EXPORTS.</i>					
Granada	882	529	2,070	2,476	9,612	Germany	4) 1,235	4) 4,079	2,716		
Dominican Republ.	3,411	3,589	6,603	5,957	49,818	Bulgaria	0 386	0 1,550	2,366		
Brazil	26,456	17,024	78,774	49,906	211,552	Spain	0 7	0 24	42		
Ecuador	1,764	1,301	4,974	2,676	37,278	Estonia	0 0	0 0	0		
Trinidad	3,347	1,898	5,404	7,756	29,057	France	1,682 4)	1,426 4)	4)		
Venezuela	1,323	1,312	3,968	3,730	25,223	Hungary	745 990	3,223 9,184	17,452		
Ceylon	884	939	2,183	1,892	8,841	Latvia	29 0	53 0	0		
Java and Madura . . . . .	...	...	961 1)	769	4,195	Lithuania	22 2	55 20	29		
French Cameroon	5,516	6,003	13,964	12,804	48,427	Poland	64 4)	474 4)	1,466		
Ivory Coast	9,030	5,415	22,452	8,594	78,681	Rumania . . . . .	...	...	77 139		
Gold Coast	73,020	78,884	148,951	138,896	494,792	Yugoslavia	326 7	1,861 243	626		
Nigeria and British Cameroon	28,358	21,017	51,617	36,019	159,165	U. S. S. R. . . . .	...	...	6) 18,975		
Saint Thomas and Prince Is.	6,702	2,169	11,435	9,557	19,795	Canada	11,266 11,557	59,357 61,840	115,972		
French Togoland	562	2,339	1,612	2,800	12,932	United States	4) 2,994	1,332 4,281	15,721		
<i>Importing Countries:</i>						Argentina	6,550 3,757	44,055 23,563	87,308		
Germany	88	57	88	141	205	Chile . . . . .	...	...	481 4)		
Belgium	121	0	170	0	18	India	37 44	379 84	223		
France	0	0	0	0	0	Japan	4) 249	4) 260	4)		
Gr. Brit. and N. Irel.	432	624	6,636	2,017	13,492	Syria and Lebanon	18 4)	150 4)	7,214		
Netherlands	99	348	853	1,473	7,368	Algeria	437 595	4,026 3,287	5,135		
United States	586	776	2,701	3,020	10,823	French Morocco . . . . .	...	...	1,594 1)		
Australia	0	0	7	0	322	Tunis . . . . .	...	...	911 1)		
Totals	162,581	144,224	365,423	290,483	1,221,596	Australia	5,064 4,440	25,007 19,645	50,651		
						New Zealand . . . . .	...	...	37 4)		
						Totals	26,240	26,263	144,384	130,454	326,035
IMPORTS.						<i>b) NET IMPORTS.</i>					
<i>Importing Countries:</i>						<i>Germany</i>					
Germany	18,982	17,801	51,485	46,363	218,563	Austria	635 419	3,660 5)	5)		
Austria	996	699	3,479	2,535	10,282	Belgium	2,136 2,266	12,174 10,723	25,093		
Belgium	1,376	3,245	3,966	7,053	24,443	Denmark	1,440 573	4,910 3,953	7,516		
Bulgaria	93	192	174	249	798	Irish Free State	1,168 732	4,780 5,068	11,735		
Denmark	791	948	1,420	1,757	8,468	Finland	194 176	1,019 1,063	2,626		
Spain	2,571	2,079	3,424	2,974	29,762	France	5) 985	5) 4,797	10,304		
Estonia	11	71	185	249	644	Gr. Brit. and N. Irel.	10,670 10,084	51,039 57,638	130,547		
Irish Free State	317	384	646	697	4,449	Greece	538 309	2,590 3,148	6,303		
Finland	9	4	64	26	157	Italy	260 196	1,113 1,129	5,194		
France	6,358	5,829	21,006	26,974	94,376	Norway	556 209	2,211 2,178	4,996		
Gr. Brit. and N. Irel.	19,791	27,895	26,361	31,764	176,467	Netherlands	1,171 584	5,359 8,146	13,510		
Greece	351	282	809	941	2,868	Poland	5) 90	5) 245	5)		
Hungary	739	606	1,757	1,574	6,477	Portugal	26 51	152 207	575		
Italy	2,745	1,962	6,667	5,827	18,470	Sweden	82 68	282 520	721		
Latvia	176	207	328	505	1,585	Switzerland	6) 1,173 6)	833 5) 4,711	5) 5,104 6)	10,551	
Lithuania	66	46	192	128	545	Czechoslovakia	46 2	53 90	104		
Norway	571	311	1,673	880	5,564	Total Europe	20,516	17,577	96,123	106,042	235,963
Netherlands	10,505	9,189	27,728	27,106	124,522	United States	582 5)	5) 5)	5)		
Poland	1,385	1,257	4,396	4,098	14,253	Chile . . . . .	...	...	5) 589	227	
Portugal	112	176	280	390	1,107	Ceylon	37 42	212 218	514		
Sweden	732	961	2,403	2,379	9,749	China . . . . .	...	...	1,003 x)	2,011	12,547
Switzerland	862	1,034	1,806	2,141	16,455	Indo-China . . . . .	...	...	159 x)	141	450
Czechoslovakia	2,383	2,769	5,547	6,058	23,488	Japan	249 5)	335 5)	2,414		
Yugoslavia	181	117	463	284	1,537	Java and Madura . . . . .	...	...	511 x)	536	1,420
Canada	2,617	2,445	6,757	8,552	22,377	Syria and Lebanon	5) 71	5) 134	858		
United States	24,491	21,462	100,355	71,300	412,610	Egypt	13 9	157 57	130		
Japan	399	359	1,124	827	2,337	Tunis . . . . .	...	...	5) 5)	33	
Australia	231	723	620	1,462	16,239	Union of S. Africa . . . . .	...	...	516 x)	13	42
New Zealand . . . . .	...	...	161 1)	165	2,487	New Zealand . . . . .	...	...	101 5)	214	
Totals	99,791	103,059	275,276	255,258	1,251,039	Totals	21,397	17,699	99,117	109,741	254,812

*) Flour reduced to grain on the basis of the coefficient: 1000 centsals of flour = 1,333,333 centsals of grain.

x) Excess of exports over imports. — b) Excess of imports over exports.

1) Data up to 30 November. — 2) Data up to 31 October. — 3) Data up to 30 June. — 4) See Net Imports. — 5) See Net Exports. — 6) Wheat only.

STOCKS OF CEREALS

Total stocks of wheat in the United States 1).

LOCATION	First day of month				
	January 1935	October 1934	January 1934	January 1933	January 1932
	1,000 centals				
On farms	81,626	140,570	116,482	163,573	193,510
In interior mills and elevators.	56,091	53,280	59,919	74,195	52,800
Commercial wheat in store	54,562	72,045	79,507	101,182	136,124
In merchant mills and attached elevators 2)	57,756	69,357	63,461	67,228	58,178
In transit to merchant mills and bought to arrive 2)	7,447	11,232	9,082	7,846	6,913
Stored for others by merchant mills 2)	6,079	6,601	5,560	6,106	11,214
<i>Total U. S. wheat as grain . . .</i>	<i>263,561</i>	<i>353,085</i>	<i>334,011</i>	<i>420,130</i>	<i>458,739</i>
Flour (in terms of grain) in merchant mills 2).	11,683	10,612	14,082	12,242	12,404
<i>Total U. S. wheat . . .</i>	<i>275,244</i>	<i>363,697</i>	<i>348,093</i>	<i>432,372</i>	<i>471,143</i>
Canadian wheat in store in bond in the U. S.	16,538	8,533	8,423	8,144	15,307
TOTAL WHEAT IN THE U. S. . . .	291,782	372,230	356,516	440,516	486,450

1) Incomplete data: wheat in transit on rail or water with other destination than to merchant mills and attached elevators and wheat flour in other positions than in these same mills, etc., are not included. — 2) The figures of the Bureau of Census' partial quarterly census are raised to represent totals. — 3) Unofficial information.

Wheat and wheat-flour stocks held by commercial mills in the United States 1)

LOCATION	Last day of month				
	December 1934	September 1934	June 1934	December 1933	December 1932
	1,000 centals				
Wheat stocks the property of commercial mills:					
Wheat in transit to merchant mills and bought to arrive	6,933	10,367	7,815	8,428	7,250
Wheat held by mills and mill elevators attached to mills	53,771	64,016	42,034	58,892	62,119
Wheat in other positions 2)	20,257	22,159	11,932	24,861	18,889
<i>Total . . .</i>	<i>80,961</i>	<i>96,542</i>	<i>61,781</i>	<i>92,181</i>	<i>88,258</i>
Wheat-flour in mills and warehouses, and in transit, sold and unsold.	7,560	6,807	7,671	9,083	7,864
Wheat stored for others in mills and mill elevators.	5,660	6,093	4,144	5,160	5,642
GRAND TOTAL 3) . . .	97,498	112,429	76,963	110,408	105,210

1) Partial census, including mills accounting for over 90 % of the total capacity of all commercial mills. — 2) These stocks are included in the total quantities in country elevators or in the total quantities in public terminal elevators and private terminal elevators not attached to mills. — 3) Including flour in terms of grain.

Commercial cereals in store in Canada and the United States.

SPECIFICATION	Friday or Saturday nearest 1st of month				
	February 1935	January 1935	December 1934	February 1934	February 1933
	1,000 centals				
WHEAT:					
Canadian in Canada	133,279	138,134	138,692	134,333	137,512
U. S. in Canada	629	629	629	1,349	4,076
U. S. in the United States	45,164	54,562	59,495	69,883	94,819
Canada, in the United States	14,978	16,538	14,141	5,879	6,685
Total . . .	194,050	209,863	212,957	211,444	243,092
RYE:					
Canadian in Canada	2,202	2,220	2,223	2,232	2,811
U. S. in Canada	0	0	0	0	55
U. S. in the United States	6,432	7,040	7,518	7,244	4,443
Canada, in the United States	0	0	0	48	305
Total . . .	8,634	9,260	9,741	9,524	7,614
BARLEY:					
Canadian in Canada	5,074	5,253	5,574	5,302	3,267
U. S. in Canada	0	0	0	0	10
U. S. in the United States	7,875	8,779	9,199	8,273	5,048
Canada, in the United States	595	807	426	0	0
Total . . .	13,544	14,839	15,199	13,575	8,325
OATS:					
Canadian in Canada	5,292	5,682	5,367	6,376	3,177
U. S. in Canada	32	37	43	166	253
U. S. in the United States	7,146	7,483	7,542	14,457	8,357
Canada, in the United States	0	0	7	0	0
Total . . .	12,470	13,202	12,959	20,999	11,787
MAIZE:					
U. S. in Canada	3,179	3,249	3,386	4,965	1,743
Of other origin in Canada	1,436	1,478	948	930	1,048
U. S. in the United States	19,318	24,501	28,093	38,610	18,843
Total . . .	23,933	29,228	32,427	44,505	21,634

Quantities of cereals on Ocean passage with first destination for Europe.

PRODUCTS	Saturday nearest 1st of month				
	February 1935	January 1935	December 1934	February 1934	February 1933
	1,000 centals				
Wheat (and flour in terms of grain)	20,078	15,211	20,462	22,670	29,347
Rye	350	187	288	110	115
Barley	2,732	696	1,448	2,280	2,012
Oats	1,757	960	1,501	1,130	1,632
Maize	12,888	10,800	12,254	17,371	11,150

AUTHORITY: *Broomhall's Corn Trade News.*

Stocks belonging to farmers in Germany.

PRODUCTS	% stocks: total production					Stocks in 1,000 centals				
	31 Jan. 1935	31 Dec. 1934	30 Nov. 1934	31 Jan. 1934	31 Jan. 1933 1)	31 Jan. 1935	31 Dec. 1934	30 Nov. 1934	31 Jan. 1934	31 Jan. 1933
Winter wheat . . .	28	38	49	35	40	24,400	33,100	42,600	38,000	38,400
Spring wheat . . .	48	58	66	62	62	6,200	7,500	8,500	9,300	8,800
Winter rye . . .	34	45	55	38	39	56,400	74,600	91,200	72,300	71,100
Winter barley . . .	17	24	32	25	19	2,600	3,700	4,900	3,900	2,600
Spring barley . . .	37	48	58	43	37	20,500	26,600	32,100	26,100	21,100
Oats	55	65	73	59	58	66,100	78,100	87,700	90,400	85,000
Late potatoes . . .	49	56	65	45	46	451,200	515,600	598,500	406,500	444,700

1) Average between data for 15 January and 15 February.

AUTHORITY: *Marktberichtstelle beim Reichsnährstand* (The absolute figures are calculated by the I. I. A.).

Stocks of cereals in commercial elevators and mills in Germany.

PRODUCTS	Last day of month				
	January 1935	December 1934	November 1934	January 1934	January 1933
	1,000 centals				
WHEAT:					
Grain	40,188	37,690	36,083	27,783	15,170
Flour for bread . . .	3,657	3,252	3,062	3,466	3,095
TOTAL 1) . . .	45,267	42,207	40,336	32,598	19,469
RYE:					
Grain	31,407	27,445	23,270	21,356	13,285
Flour for bread . . .	2,390	2,463	2,233	1,917	1,579
TOTAL 1) . . .	31,921	31,067	26,555	24,176	15,606
BARLEY	4,090	5,377	5,203	5,148	3,629
OATS	2,392	1,896	1,660	2,277	2,209

1) Including flour in terms of grain, on the basis of the coefficient: 1,000 centals of wheat flour = 1,388.89 centals of wheat; 1,000 centals of rye flour = 1,470.59 centals of rye.

Grain and flour stocks at the ports of Great Britain and Ireland 1).

PRODUCTS	First day of month				
	February 1935	January 1935	December 1934	February 1934	February 1933
	1,000 centals				
WHEAT:					
Grain	7,704	8,808	8,112	7,704	3,576
Flour as grain . . .	768	864	744	1,008	600
TOTAL . . .	8,472	9,672	8,856	8,712	4,176
BARLEY	980	1,080	1,200	1,780	540
OATS	256	288	208	640	320
MAIZE	4,464	4,320	4,560	2,040	2,832

1) Imported cereals.

AUTHORITY: *Broomhall's Corn Trade News*.

Commercial stocks of cereals in Antwerp, Rotterdam and Amsterdam 1).

PRODUCTS AND LOCATION	Saturday nearest 1st of month 2)				
	February 1935	January 1935	December 1934	February 1934	February 1933
	1,000 centals				
WHEAT:					
Antwerp	1,997	2,285	2,299	1,342	1,201
Rotterdam	1,519	1,662	1,464	1,807	784
Amsterdam	11	19	27	17	13
RYE:					
Antwerp	119	162	144	271	198
Rotterdam	132	198	203	220	551
Amsterdam	1	0	3	51	6
BARLEY:					
Antwerp	112	196	244	340	380
Rotterdam	88	126	220	408	265
Amsterdam	0	6	4	111	59
OATS:					
Antwerp	57	63	85	35	111
Rotterdam	30	51	94	143	154
Amsterdam	22	24	25	30	25
MAIZE:					
Antwerp	71	203	89	133	310
Rotterdam	176	254	375	165	838
Amsterdam	39	60	74	16	152

1) Imported cereals. See note on p. 306 of the *Crop Report* of April 1934. — 2) For Antwerp the data refers to the last day of the preceding month, for Amsterdam to the first day of the month indicated.

AUTHORITIES: *Nederlandsche Silo-, Elevator- en Graanfactor Mij*, Amsterdam, and *Chamber of Commerce and Industry for Rotterdam*, Rotterdam.

STOCKS OF COTTON

Stocks of cotton on hand in the United States.

LOCATION	Last day of month				
	January 1935	December 1934	November 1934	January 1934	January 1933
	1,000 centals				
In consuming establishments	5,881	6,403	6,373	7,892	7,349
In public storage and at compresses . . .	44,196	47,535	48,294	46,845	49,298
TOTAL . . .	50,077	53,938	54,667	54,737	56,647

Stocks of cotton at Bombay and at Alexandria.

PORTS	Thursday nearest 1st of month				
	February 1935	January 1935	December 1934	February 1934	February 1933
	1,000 centals				
Bombay 1)	2,452	2,084	1,977	3,576	2,524
Alexandria 2)	2,406	2,399	2,029	3,086	4,070

1) Stocks held by exporters, dealers and mills. — 2) From February 1934 quantities consumed in Alexandria as well as those returned to the interior of the country are not included; prior to this date quantities returned to the interior are included.

AUTHORITIES: *East Indian Cotton Ass.* and *Commission de la Bourse de Minet-el-Bassal*.

Stocks of cotton in Europe.

LOCATION. DESCRIPTION	Thursday or Friday nearest 1st of month				
	February 1935	January 1935	December 1934	February 1934	February 1933
	1,000 centals				
<i>Great Britain:</i>					
American	1,486	1,355	1,224	2,527	2,423
Argentine, Brazilian, etc.	843	1,019	1,028	305	173
Peruvian, etc.	563	615	566	453	334
East Indian, etc.	168	196	237	160	50
Egyptian, Sudanese	1,220	1,203	1,247	1,516	1,027
W. Indian, W. and E. African, Australian	199	245	280	209	335
TOTAL . . .	4,479	4,633	4,582	5,170	4,342
<i>Bremen:</i>					
American	1,210	1,287	1,346	2,681	2,250
Other	262	265	277	85	126
TOTAL . . .	1,472	1,552	1,623	2,766	2,376
<i>Le Havre:</i>					
American	698	697	634	1,368	1,382
French colonies	22	36	21	28	16
Other	102	105	106	43	28
TOTAL . . .	822	838	761	1,439	1,426
<i>Total Continent 1):</i>					
American	2,381	2,558	2,425	5,096	4,417
Argentine, Brazilian, etc.	183	202	147	49	26
E. Indian, Australian, etc.	179	173	192	127	62
Egyptian	266	220	173	162	125
W. Indian, W. African, E. African, etc. .	155	211	247	90	146
TOTAL . . .	3,164	3,364	3,184	5,524	4,776

1) Includes Bremen, Le Havre, and other Continental ports.

AUTHORITIES: *Liverpool Cotton Ass* and (for Le Havre) *Bulletin de correspondance de la Bourse au Havre*.

WEEKLY PRICES BY PRODUCTS

(All quotations are, unless otherwise stated, for spots. The monthly averages are based on weekly quotations, the annual averages on the monthly)

DESCRIPTION	15				AVERAGE				Commercial Season	
	Feb.				Jan.					
	1935	1935	1935	1935	1935	1934	1933	1933	1933-34	1932-33
Wheat.										
Budapest: Tisza region, 78 kg. p. hl. (pengő p. quintal)	18.02	17.87	17.65	17.35	16.97	8.69	15.24		9.70	13.73
Braila: Good quality (ici p. quintal) . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	* 375	* 535	
Winnipeg: No. 1 Manitoba (cents p. 60 lb.)	79 3/4	79	78 7/8	79 1/4	79 1/4	65 1/8	45 1/8	67 1/8	54 1/4	54 1/4
Chicago: No. 2 Hard Winter (cents p. 60 lb.)	n. 105 1/2	n. 104 1/2	n. 103	n. 105 1/2	n. 106 1/2	91	n. 47 1/2	89 1/4	59 1/4	59 1/4
Minneapolis: No. 1 Northern (cents p. 60 lb.)	109 3/4	108 1/8	109 1/4	110 1/4	111 1/8	89	47 1/2	89 1/8	60 1/8	60 1/8
New-York: No. 2 Hard Winter (cents p. 60 lb.)	117 3/8	116 1/4	115 3/8	116 1/8	116 1/8	100 1/2	56 1/2	98 1/4	68 1/8	68 1/8
Buenos Aires (a): Barietta, 80 kg. p. hectol. (paper pesos p. quintal)	6.35	6.35	6.40	6.40	6.36	5.75	5.39	5.85	6.09	6.09
Karachi: Karachi white, 2% barley 1 1/2 % dirt (rupees p. 65 lb.)	23-8-0	23-13-0	24-3-0	25-2-0	24-6-9	22-5-6	30-14-9	22-2-4	28-4-2	28-4-2
Berlin: Home grown (free at Brandenburg stations; Rm. p. quintal) 1)	20.45	20.45	20.45	20.30	20.30	18.75	19.30	18.65	19.60	19.60
Hamburg (c. i. f.; Rm. p. quintal):										
No. 2 Manitoba 2)	8.79	8.76	8.85	8.88	* 8.95	7.60	8.14	7.94	8.83	8.83
Barusso 3)	5.81	5.98	5.98	6.06	6.10	5.61	6.95	6.22	7.76	7.76
Antwerp (francs p. quintal):										
Home-grown	60.00	61.00	60.00	60.00	60.00	57.60	78.25	63.00	79.70	79.70
No. 1 Manitoba (Atlantic) (in bond) .	75.00	76.00	76.00	72.25	74.85	60.60	69.75	67.65	74.35	74.35
Barusso (in bond)	48.75	49.00	50.00	49.50	49.75	48.40	59.37	53.00	66.20	66.20
Paris: Home-grown (delivery regional depots; frs. p. quintal) 4):										
76 kg. p. hl., crop of 1934	81.00	81.00	80.00	79.00	77.75	126.00	107.35	125.65	107.35	107.35
76 kg. p. hl., crop of 1933	133.50	133.50	133.50	133.50	133.50					
London: Home grown (sh. p. 504 lb.) 5).	21/6	21/6	21/6	21/6	21/6	19/6	22/9	20/10	24/8 1/2	24/8 1/2
Liverpool and London (c. i. f., parcels, shipping current month; sh. p. 480 lb.)										
French (on sample)	18/-	18/-	18 4 1/2	18/6	18/6 3/4	n. q.	n. q.	n. q.	n. q.	n. q.
No. 1 Northern Manitoba (Atlantic) .	31/3 3/4	31/1 1/2	31/6	31/6	31 4 1/2	27/1 1/4	24 5 1/4	26/9	26/8 1/2	26/8 1/2
No. 1 Northern Manitoba (Pacific) . .	31/0 3/4	30/10 1/2	31/1 1/2	31/-	30/10 1/2	26/6 1/4	23/10 1/2	26/7	26/4	26/4
No. 3 Northern Manitoba (Pacific) . .	27/9 1/4	27/7 1/2	27/10 1/2	27/9 3/4	27/7 3/4	24/5	22/10 1/2	24/5 1/4	25/2 1/2	25/2 1/2
White Pacific	n. q.	n. q.	n. q.	n. q.	n. q.	20/6	n. q.	* 20/5	n. q.	n. q.
Rosafé (adfoat) 6)	19/10 1/2	20/1 1/4	20/3	20/11 1/4	20/10 1/2	18/3 1/4	26/6 1/4	19/5 1/4	23/2	23/2
Australian	n. 23/6	n. 23/6	n. 23/6	n. 23/6	23/3 3/4	23/5 1/4	23/6	23/4	25/7	25/7
Milan (b): Home-grown, soft, 4 Buono mercantile 76-78 kg. p. hl. (lire p. quint.)	95.00	94.50	94.50	94.50	94.00	85.50	108.10	84.10	101.80	101.80
Genoa: Sicilian Durum (c. i. f., lire p. quint.)	114.50	113.25	111.75	110.75	110.95	110.00	n. q.	107.85	* 119.75	* 119.75
Genoa (c. i. f.; U. S. \$ p. quintal):										
No. 2 Manitoba (Pacific)	3.16	3.16	3.16	3.10	3.11	2.93	1.87	2.93	2.23	2.23
No. 2 Canadian Durum	4.09	4.05	4.06	4.05	4.07	3.21	2.19	3.11	2.59	2.59
Plata, 80 kg. p. hl. 7)	97/-	99/-	98/6	99/-	99/7 1/2	88/1	1.60	* 92/10	* 1.83	* 1.83
Rye.										
Berlin: Home-grown (free at Brandenburg stations; Rm. p. quintal) 1) . .	16.45	16.45	16.45	16.30	16.30	15.50	15.47	15.34	15.52	15.52
Hamburg (c. i. f.; Rm. p. quintal): Plata, 72-73 kg. p. hl.	5.64	5.72	5.81	5.81	5.85	4.29	5.64	4.76	* 5.98	* 5.98
Budapest: Home-grown (pengő p. quintal)	13.55	13.62	13.35	13.55	12.94	4.94	6.88	5.24	6.77	6.77
Warsaw: Good quality (zloty p. quint.)	14.75	14.75	14.75	14.75	14.75	14.50	18.78	14.32	18.06	18.06
Winnipeg: No. 2 (cents p. 56 lb.) . . .	51 1/4	49	50 1/2	52 1/8	55 1/4	46 1/4	32	47 1/8	37 1/8	37 1/8
Minneapolis: No. 2 (cents p. 56 lb.) . .	68 1/4	67 1/2	68 1/2	71 1/8	74 1/2	60 1/2	31 1/2	63	41 1/4	41 1/4
Groningen (c): Home-grown (fl. p. quint.)	7.30	7.45	7.60	7.60	7.54	7.12	3.70	6.65	3.92	3.92

* Indicates that the product during part of the period under review was not quoted. — n. q. = not quoted. — n. = nominal. — a) Thursday prices. — b) Saturday prices. — c) Prices of preceding Tuesday.

1) 1 Oct. 1933-13 Aug. 1934 for wheat and 1 Oct. 1933-15 July 1934 for rye: minimum prices; subsequently: fixed producers prices for the price region of Berlin town. See also *Bull. of Agric. Economics and Sociology*, Aug. 1934, p. 342. — 2) From Nov. 1934, No. 1 Manitoba. — 3) Aug.-Dec. 1932: 80 kg. p. hl.; year 1933: 79 kg.; subsequently: 80 kg. — 4) 16 July 1933-25 December 1934: minimum prices on the farm increased by transport costs from farm to Paris stations. From 1 August 1934 a considerable percentage of old crop wheat has to be used in the flour for breadmaking. — 5) From Aug. 1933: prices on the farm. — 6) August-Dec. 1932: 64 lb. p. bushel; Jan.-Oct. 1933: 63 1/2 lb.; Nov.-Dec. 1933: 63 lb.; subsequently: 64 lb. — 7) From Feb. 1934: prices in sh. 1000 kg. — 8) 18 Jan.: 60.00. — 9) Jan. 76.00. — 10) 18 Jan.: 50.00. — 11) No. 1 Can. Durum.

DESCRIPTION	15	8	1	25	AVERAGE				
	Feb.	Feb.	Feb.	Jan.	Jan.	Feb.	Feb.	Commercial	
	1935	1935	1935	1935	1935	1934	1933	Season	
								1933-34	1932-33
Barley.									
Warsaw: Malting, good quality (zloty p. quintal)	21.50	21.50	21.50	22.12	21.97	15.37	17.06	* 15.87	* 17.11
Braila: Average quality (lei p. quintal)	285	288	288	⁹⁾ 285	⁹⁾ 282	⁹⁾ 149	n. q.	* 154	* 186
Prague: Malting, av. qual. (crs. p. quintal) r)	134.00	134.00	134.00	132.50	132.50	92.00	79.00	* 94.20	* 83.30
Winnipeg: No. 4 Western (cents p. 48 lb.)	42 1/2	42 3/8	43 1/8	45	46 3/4	39 1/4	25 1/8	36 7/8	29 1/4
Chicago: Feeding (on sample; cents p. 48 lb.)	83	81	80	82	n. 86	60 1/2	26	54	33 1/4
Minneapolis: No. 2 Feeding (c. p. 48 lb.)	77	76	76	77	80	46	21 1/2	45 1/8	27 1/4
Berlin: Home-grown fodder (free at Brandenburg stations; Rm. p. quint.) 2) 3)	16.35	16.35	16.35	16.20	16.20	16.00	16.25	* 16.17	* 16.58
Antwerp: Danubian (in bond; francs p. q.)	63.50	65.00	65.00	65.00	⁷⁾ 66.00	45.60	53.25	49.35	55.50
London: English malting, best quality (sh. p. 448 lb.) 4)	37/6	37/6	37/6	37/6	37/6	35/7 1/2	35/6	* 39/5 1/4	* 35/-
Liverpool and London (c.i.f., parcels; shipping current month; sh. p. 400 lb.):									
Danubian, 3 % dirt	n. q.	n. q.	n. q.	n. q.	n. q.	13/1 3/4	n. q.	* 13/9 1/4	* 16/7
Russian (Azow-Black Sea)	n. q.	n. q.	n. q.	n. q.	n. q.	* 13/3	* 15/5	* 13/7 1/4	* 16/5
No. 3 Canadian Western	22/9	22/6	23/-	23/9	24/1 1/4	19/-	17/2 1/4	17/9 1/4	* 18/1 3/4
Californian malting (sh. p. 448 lb.)	31/6	n. q.	n. q.	n. q.	n. q.	21/0 3/4	20/9 3/4	22/7 1/4	22/8
Plata (64-65 kg. p. hl)	18/-	18 1/2	18/6	18/9	18/8	12/11 1/4	14/11 1/4	14/2 1/4	* 15/9 1/2
Persian	18/-	18/6	18/9	⁹⁾ 19/-	19/7 1/2	13/0 3/4	15/8	* 14/0 1/4	* 16/4
Groningen a): Home grown, winter (fl.p.q.)	5.17	5.42	5.50	5.60	5.57	4.09	4.50	4.44	4.40
Oats.									
Braila: Good quality (lei p. quintal)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	* 148	* 195
Winnipeg: No. 2 White (cents per 34 lb.)	42 9/16	43	43 1/2	44 3/4	44 3/8	33 3/4	23 3/8	33 3/4	26 1/4
Chicago: No. 2 White (cents per 32 lb.)	57	56 1/4	55 1/2	56 1/2	58 1/4	37 1/4	16 1/4	37 1/4	21 1/8
Buenos Aires b): Current quality (paper pesos p. quintal)	5.27	5.20	5.15	5.20	5.08	3.42	4.00	3.65	4.43
Berlin: Home grown (free at Brandenburg stations; Rm. p. quint.) 2)	16.55	16.55	16.55	16.40	16.40	13.92	11.92	14.92	13.05
Paris: Home grown, black and other (delivery regional depots; frs. p. quintal)	51.10	51.35	46.50	46.25	45.10	46.95	78.60	48.00	76.30
London: Home grown white (sh. p. 336 lb.) 4)	20/6	20/6	20/6	20/6	20/6	19/6	18/-	18/1 1/2	18/6
Liverpool and London (c.i.f., parcels; shipping current month; sh. p. 320 lb.):									
Canadian, No 2 Western (Pacific) 5)	20/3	20/-	20/6	⁹⁾ 20/9	20/11 1/2	17/9 3/4	15/3	* 17/4	* 16/9
Plata (f. a. q.)	12/3	12/3	12/6	12/7 1/2	12/6 1/2	8/10 1/2	11/6 1/4	10/2	12/9
Milan (c) (lire p. quintal):									
Home grown	57.50	57.50	57.50	57.50	57.50	52.00	66.50	50.70	62.80
Foreign	54.50	54.50	54.50	56.00	56.00	52.50	56.25	50.05	57.10
Maize.									
Braila: Average quality (lei p. quintal)	⁹⁾ 216	⁹⁾ 220	⁹⁾ 205	217	n. q.	⁹⁾ 173	⁹⁾ 182	* 214	* 160
Chicago: No. 3 Yellow (cents p. 56 lb.)	90 1/2	87 1/2	86 1/4	89	* 31	48 3/4	23 1/4	57 1/8	36 1/2
Buenos Aires (b): Yellow Plata (paper pesos p. quintal)	5.00	5.65	5.70	5.55	5.87	5.04	4.30	5.30	4.00
Antwerp (in bond; francs p. quintal):									
Bessarabian	60.00	n. q.	n. q.	n. q.	n. q.	n. q.	52.00	n. q.	* 49.20
Yellow Plata	52.00	52.50	52.50	55.00	¹¹⁾ 54.60	46.85	52.75	51.25	49.50
Cinquantino (Argentine "Cuarentino")	54.00	55.50	55.00	56.50	¹¹⁾ 56.85	54.10	73.35	56.50	64.90
Liverpool and London (c.i.f., parcels; shipping current month; sh. p. 480 lb.):									
Danubian	n. q.	n. q.	n. q.	n. q.	* 21/2	* 17/7	17/7 1/4	* 18/11 1/4	16/11 1/4
Yellow Plata	17/1 1/2	18/9	19/-	19/-	20/6 1/4	17/11 1/2	18/-	18/7 1/4	16/10
No. 2 White flat African	19/-	20/-	21/6	⁹⁾ 21/7 1/2	⁹⁾ 22/4 1/2	n. q.	* 17/10	* 22/4 1/4	* 17/11
Milan (c): « Alto Milanese » (lire p. quint.)	58.00	58.00	58.00	58.00	57.75	44.00	55.60	53.50	51.65

* Indicates that the product, during part of the period under review, was not quoted. — n. q. = not quoted. — n. = nominal. — a) Prices of preceding Tuesday. — b) Thursday prices. — c) Saturday prices.

1) From August 1934: monopoly price, paid to producers, for delivery Prague. See also *Bull. of Agric. Econ. and Soc.*, Nov. 1934, p. 512 — 2) From 16 July 1934 for fodder barley and from 1 August 1934 for oats: fixed producers' prices for the price region of Berlin town. See also *Bull. of Agric. Econ. and Soc.*, Aug. 1934, p. 342. — 3) July-August 1933: prices for rowed winter barley; Sept. 1933-June 1934: spring barley, average quality. — 4) From Aug. 1933: prices on the farm. — 5) During June-Dec. 1934: Atlantic. — 6) Price in Costanza. — 7) 18 Jan.: 66.00. — 8) Shipping February. — 9) In store — 10) 18 Jan.: 55.00. — 11) 18 Jan.: 57.00.

DESCRIPTION	15	8	1	25	AVERAGE				
	Feb.	Feb.	Feb.	Jan.	Jan.	Feb.	Feb.	Commercial	
	1935	1935	1935	1935	1935	1934	1933	Season	
								1934	1933
Rice (milled).									
Valencia (a): No. 3 Belloch (pesetas p. quintal)	56.00	56.00	55.50	55.50	55.40	44.62	* 46.50	46.95	43.10
Milan (b) (lire p. quintal):									
Vialone, oiled	144.00	144.00	145.00	147.50	148.25	199.25	189.25	177.10	198.20
Maratelli, oiled	124.00	124.00	125.00	126.50	126.85	151.75	137.00	138.05	139.90
Originario, white	102.50	102.50	102.50	102.50	102.50	104.85	97.75	102.80	95.50
Rangoon: No. 2 Burma (rupees p. 7500 lb.)	232 1/2	222 1/2	225	235	215 5/8	* 170 7/8	199 3/4	201 1/8	194 1/4
Saigon (Indo-chinese piastres p. quintal):									
No. 1 Round white, 25 % broken	...	...	...	3.59	¹⁾ 3.41	3.06	4.26	3.25	4.08
No. 2 Japan, 40 % broken	...	...	...	3.48	¹⁾ 3.29	2.90	4.10	3.09	3.90
Marseilles (a): No. 1 Saigon (c. i. f.; frs. p. quintal)	47.00	45.00	43.00	42.00	42.80	45.00	56.00	45.95	53.10
London (a) (c. i. f.; shillings p. cwt.):									
No. 3 Spanish Belloch, oiled	11/3	11/6	11/6	12/3	12/0 1/4	11/5 1/4	12/10 1/4	* 10/9	12/5 1/4
No. 6 Italian good, oiled	13/9	13/9	13/9	13/9	13/7 3/4	12/3 3/4	12/3 1/4	11/10 1/4	11/2 1/4
American Blue Rose, extra fancy	17/6	16/10 1/2	17/-	17/3	17/1 1/4	17/6	13/3 1/4	17/3 1/4	16/9 1/4
No. 2 Rangoon or Bassein (Burma)	7 1/4 1/2	7 1/2 1/4	7 1/4 1/2	7/6	7/0 1/2	5/10	6/10	6/7 1/4	6/6 1/4
No. 1 Saigon	6/9	6 7/8 1/4	6/9	¹⁾ 6/9	¹⁾ 6 6/8 1/2	5/9	7/0 1/4	6/3 1/4	6/9 1/4
Siam Super, white	8 1/1 1/2	8/-	8 1/4 1/2	7/9	7 7/8 1/2	6/11	7/9 1/4	7/5	8/1 1/2
Tokio: Chumai (brown Japanese, average quality, yen p. koku)	30.20	29.80	29.30	29.30	29.07	23.00	22.40	26.09	21.62
Linseed.									
Buenos Aires (a): Current quality (paper pesos p. quintal)	11.80	11.85	12.00	12.20	11.95	11.74	8.96	12.74	10.56
Antwerp: Plata (in bond; frs. p. quint.).	98.00	99.00	101.00	101.00	¹⁾ 100.25	102.35	100.25	107.60	111.70
London (c. i. f.; £ p. long ton):									
Plata (delivery Hull)	¹⁾ 9-5-0	¹⁾ 9-7-6	¹⁾ 9-7-6	¹⁾ 9-12-6	¹⁾ 9-10-7	9-8-5	8-6-7	10-0-8	9-11-11
Bombay bold	12-2-6	12-10-0	n. 12-5-0	12-17-6	12-10-7	11-8-5	10-14-4	11-17-0	11-5-4
Duluth: No. 1 Northern (quotations of terminal market; cents p. 56 lb.)	¹⁾ 187	¹⁾ 185 1/2	¹⁾ 187	¹⁾ 188	¹⁾ 187 1/4	¹⁾ 187 1/4	¹⁾ 109	186 1/4	156 1/4
Cottonseed.									
Alexandria (piastres p. ardeb):								1933-34	1932-33
Upper Egypt	72.4	73.7	74.4	75.9	73.1	41.1	72.8	41.8	67.3
Sakellaridis	68.4	69.3	70.0	72.4	69.8	37.0	69.3	* 37.5	63.6
London: Sakellaridis (c. i. f., delivery Hull; £ p. long ton)	6-18-9	6-17-6	7-3-9	7-3-9	¹⁾ 7-0-7	4-7-2	6-17-6	4-5-11	6-11-4
Cotton.									
New Orleans: Middling (cents p. lb.)	12.63	12.60	12.53	12.67	12.72	12.09	6.11	10.90	7.27
New York: Middling (cents p. lb.)	12.65	12.65	12.55	12.65	12.70	12.32	6.11	11.07	7.38
Bombay: M. g. Broach f. g. (terminal market quotations; rup. p. 784 lb.)	¹⁾ 245	¹⁾ 253	¹⁾ 247.	¹⁾ 253	¹⁾ 247 1/4	¹⁾ 209 1/4	¹⁾ 184	197	201 1/4
Alexandria (talaris p. kantar):									
Sakellaridis, f. g. f.	15.45	15.65	15.95	16.15	16.19	16.46	12.71	14.44	14.15
Ashmuni-Zagora, f. g. f.	13.27	13.32	13.62	13.92	14.01	12.61	11.45	11.63	12.46
Bremen: Middling (U. S. cents p. lb.)	14.63	14.57	14.59	14.68	¹⁾ 14.74	13.78	7.14	12.56	8.54
M. g. Broach, f. g. (pence p. lb.)	n. 6.50	n. 6.70	n. 6.50	n. 6.65	n. 6.34	n. 5.17	n. 4.30	n. 4.81	n. 4.81
Le Havre: Middling (Gulf; frs p. 50 kg.)	253.00	260.00	253.00	260.00	260.25	247.75	214.00	229.85	237.75
Liverpool (pence per lb.):									
Middling, fair	n. 8.06	n. 8.05	n. 8.07	n. 8.13	n. 8.21	n. 7.66	n. 6.14	n. 7.11	n. 6.76
Middling	7.06	7.05	7.07	7.08	7.16	6.61	4.98	6.02	5.61
Sao Paulo, g. f.	7.21	7.15	7.17	7.18	7.21	6.67	n. 5.24	6.13	n. 5.87
M. g. Broach, f. g.	5.89	5.87	5.88	5.86	5.88	n. 4.91	n. 4.59	n. 4.62	n. 5.01
Egyptian Sakellaridis, f. g. f.	8.80	8.80	8.88	9.00	9.02	9.15	7.12	8.07	7.77

* Indicates that the product, during part of the period under review, was not quoted. — n. q. = not quoted. — n. = nominal. — a) Thursday prices. — b) Saturday prices.

1) 18 Jan.: 3.43; 11 Jan.: 3.23; 4 Jan.: 3.39. — 2) 18 Jan.: 3.30; 11 Jan.: 3.15; 4 Jan.: 3.25. — 3) New crop; shipping Febr.-March. — 4) 18 Jan.: 99.00. — 5) New crop. — 6) May future. — 7) 18 Jan. (revised): 7-7-6. — 8) April-May future. — 9) 18 Jan. (revised): 14.72.

DESCRIPTION	15	8	1	25	AVERAGE					Commercial Season	
	Feb.	Feb.	Feb.	Jan.	Jan.	Feb.	Feb.				
	1935	1935	1935	1935	1935	1934	1933			1934	1933
Bacon.											
London, Provision Exchange (a) (shill. p. cwt.):											
English, No 1, lean sizable.	91/6	91/6	95/6	95/6	91/4	98/6	...	91/2	...		
Danish, No 1, sizable.	86/-	86/-	90/-	90/-	87/6	96/-	58/9	87/11	74/5		
Irish, No 1, sizable.	90/-	87/6	93/-	93/-	89/9	98/3	70/6	90/5	83/4		
Lithuanian, No 1, sizable.	78/-	78/-	83/-	83/-	80/-	90/-	50/9	82/-	65/5		
Dutch, No 1, sizable.	82/-	82/-	86/-	89/-	86/-	92/-	53/-	84/-	67/6		
Polish, No 1, sizable.	76/-	76/-	81/-	81/-	77/7	88/-	49/3	80/11	63/10		
Swedish, No 1, sizable.	82/-	82/-	88/-	88/-	84/1	94/-	55/6	84/4	70/-		
Canadian, No 1, sizable.	72/-	72/-	78/-	78/6	74/3	89/6	51/9	80/3	64/6		
Butter.											
Copenhagen (b): Danish (crs. p. quint.) . .	200.00	210.00	204.00	202.00	204.00	144.75	178.25	160.75	171.00		
Leeuwarden, Commission for butter quotations (b): Dutch (cents p.kg)	55	55	55	57	58 3/4	46 1/2	65	44 3/4	60		
Zutphen, auction: Dutch (price for home consumption; cents p. kg.)	153	153	150	150	152 1/4	149 1/2	157 1/4	147 1/4	159 1/4		
Germany (c) (fixed prices; Rm. p. 50 Kg.) 1):											
Butter with quality mark	130.00	130.00	130.00	130.00	130.00	129.57	94.35	129.04	112.72		
Creamery butter	123.00	123.00	123.00	123.00	123.00	123.00	83.00	120.87	106.25		
London (d): English creamery, finest quality (shillings p. cwt.)	119/-	119/-	119/-	119/-	116/2	109/8	154/-	109/6	140/10		
London, Provision Exchange (a) (shill. p. cwt.):											
Danish creamery, unsalted.	115/6	120/-	118/-	116/6	117/8	91/7 1/2	107/1 1/2	98/8	103/9		
Estonian, unsalted.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	* 67/11	* 84/4		
Latvian, unsalted.	n. q.	100/-	n. q.	n. q.	n. q.	* 74/-	n. q.	* 69/3	* 82/9		
Dutch creamery, unsalted.	105/-	105/-	109/-	111/-	* 111/6	91/6	113/-	80/4	103/4		
Argentine, finest, unsalted.	92/-	94/-	n. q.	n. q.	n. q.	65/3	76/-	* 68/3	* 77/10		
Siberian, salted.	n. q.	n. q.	n. q.	n. q.	n. q.	* 63/-	n. q.	* 66/-	* 73/5		
Australian, finest, salted.	88/6	88/6	87/6	82/6	81/5	65/10 1/2	74/1 1/2	70/2	80/-		
New Zealand, finest, salted.	89/-	89/6	88/6	84/6	82/7	69/6	77/3	72/7	81/1		
Cheese.											
Milan (lire p. quintal):											
Parmigiano-Reggiano, 1st quality, production 1932 2)	700.00	700.00	700.00	695.00	705.00	1,007.00	1,262.00	989.00	1,234.00		
Parmigiano - Reggiano, 1st quality, production 1933 2)	595.00	595.00	595.00	595.00	597.00	840.00	1,012.00	806.00	1,015.00		
Green Gorgonzola, mature, choice	425.00	420.00	420.00	420.00	415.00	395.00	575.00	412.60	473.70		
Rome: Roman Pecorino, choice (lire p. q)	662.00	662.00	662.00	662.00	662.00	697.00	1,237.50	658.65	1,029.00		
Alkmaar: Edam 40 + (40 % butterfat, with the country's cheesemark) factory cheese, small (florins p. 50 kg.)	17.00	17.00	17.00	18.00	17.87	23.50	* 24.67	20.98	22.40		
Gouda: Gouda 45+ (whole milk cheese, with the country's cheesemark) home made (florins p. 50 kg.)	19.00	19.50	19.50	20.00	19.87	25.69	28.75	22.52	26.59		
Kempton (c) (Rpf. p. 1/2 kg.):											
Soft cheese, green, 20 % butterfat . . .	26	26	26	26	26	24 1/2	18	23 1/4	20 1/4		
Emmenthal from the Allgäu, whole milk cheese, 1st quality	75	73	73	73	73	71	74 1/2	71 1/2	72 1/4		
London, Provision Exchange (a) (shill. p. cwt.):											
English Cheddar, finest farmers	86/-	86/-	86/-	86/-	86/-	92/-	97/-	* 83/5	86/3		
English Cheshire, officially graded 3) . .	92/2	94/10	84/-	94/10	88/11	115/6	94/6	83/4	94/4		
Italian Gorgonzola (d)	86/4	85/2	84/-	81/8	81/11	81/1	95/8	82/9	85/3		
Dutch Edam, 40 + (d)	43/-	43/6	44/6	44/6	44/6	70/3	60/7 1/2	54/5	59/8		
Canadian, finest white.	60/-	59/-	59/-	58/6	58/2	63/9	54/-	59/8	59/8		
New Zealand, finest white.	48/9	47/9	47/3	45/9	46/10	43/4	45/2	46/5	46/10		

* Indicates that the product, during part of the period under review, was not quoted. — n. q. = not quoted. — n. = nominal —
a) Average prices of Thursday and Friday morning. — b) Thursday prices. — c) Wednesday prices. — d) Average prices for the week.

1) See note on page 306 of the *Crop Report* of April 1934. — 2) Prices of cheese made in 1932 are compared for the preceding years, with those of cheese made in 1931 and in 1930 respectively; prices of 1933-cheese with those of cheese made in 1932 and 1931. The yearly averages refer to periods from Sept. to August. — 3) From May 1934 onwards: National Mark, selected.

DESCRIPTION	15	8	1	25	AVERAGE					
	Feb.	Feb.	Feb.	Jan.	Jan.	Feb.	Feb.	Commercial		
	1935	1935	1935	1935	1935	1934	1933	Season		
								1934	1933	
Eggs (fresh).										
Antwerp, auction: Belgian, average qual. (firs. p. 100)	32.00	35.00	40.00	44.00	45.25	38.75	54.50	42.80	48.40	
Denmark (a): Danish for export (crs. per quintal)	90.00	90.00	90.00	90.00	102.50	90.00	130.00	103.60	105.85	
Roermond, auction: Dutch, 57/58 gr. each, white (fl. p. 100) 1):										
Fixed price for export into Germany . . . . .	...	...	...	...	...	3.62	3.67	3.96	3.48	
Price for other destinations . . . . .	...	...	...	...	...	3.62	3.67	3.34	3.48	
Warsaw (b): Polish, average weight 50 gr. each, different colours (zloty p. 1440, including box) . . . . .	...	...	...	120.00	9) ...	116.25	192.50	106.50	123.60	
Berlin (c): German, National mark "Gr-S" big, new laid (Rm. p. 100)	12.00	12.00	12.00	12.00	12.00	10.37	10.19	10.37	10.41	
London, Egg Exchange (d) (sh. p. great hundred):										
English, National mark, specials	14/9	14/7 ¹ / ₂	14/9	14/1 ¹ / ₂	15/2	13/10 ¹ / ₂	16/1 ¹ / ₂	15/5	13/10 ¹ / ₂	
Belgian, 15 1/2 lb. p. 120	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	13 9	* 11/0 ¹ / ₂	* 11/1	
Danish, 18 lb. p. 120	13/3	12/6	12/9	12/9	13/-	11/8 ¹ / ₂	15/4 ¹ / ₂	12/5 ¹ / ₂	12/9 ¹ / ₂	
North Irish, 18 lb. p. 120	14/6	14/7 ¹ / ₂	n. q.	14/-	*) 14/3	13/10 ¹ / ₂	* 15/11	* 12/9 ¹ / ₂	15/1	
Dutch, all brown, 18 lb. p. 120	13/3	13/3	13/1 ¹ / ₂	13/6	13/7	* 13/4	16/0 ¹ / ₂	13/5	* 14/0 ¹ / ₂	
Polish, 57/54 grams each 2)	n. q.	7/5 ¹ / ₂	n. q.	n. q.	n. q.	7/4	n. q.	6/10 ¹ / ₂	* 7/4 ¹ / ₂	
Chinese, violet	7/4 ¹ / ₂	7/-	7/4 ¹ / ₂	n. q.	* 8/0 ¹ / ₂	7/9 ¹ / ₂	* 11/0 ¹ / ₂	* 8/3 ¹ / ₂	* 9/10	
Australian, 16 lb. p. 120	n. q.	8/1 ¹ / ₂	8/4 ¹ / ₂	8/10 ¹ / ₂	9/4 ¹ / ₂	* 9/5	* 12/10 ¹ / ₂	* 11/5 ¹ / ₂	* 12/4 ¹ / ₂	
Maritime freights 3).										
Shipments of Wheat and Maize.										
								1933-34	1932-33	
Danube to Antwerp/Hamburg. (shill. per Black Sea to Antwerp/Hamb. long ton)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	
	10/3	10/3	10/3	10/4 ¹ / ₂	10/4 ¹ / ₂	10/9	10/5	* 14/1	* 13/9	
St. John to Liverpool 4)	1/6	1/6	1/6	1/6	1/6	2/3	1/6	* 1/11	* 1/7	
Port Churchill to United Kingdom	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	
Montreal to United Kingdom	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	
Gulf to United Kingdom 4)	2/6	2/6	2/6	2/6	2/6	2/9	2/3	* 2/9	* 3/-	
New York to Liverpool 4)	1/6	1/6	1/6	1/6	1/6	1/9	1/6	* 1/4 ¹ / ₂	* 1/8 ¹ / ₂	
Northern Range to U.K./Cont.	n. q.	n. q.	n. q.	n. q.	n. q.	1/10	n. q.	* 1/9	* 0.06	
North Pacific to United Kingdom (sh. per long ton)	17/-	17/-	17/-	17/-	18/-	20/3	22/3	20/1	20/10	
Vancouver to Yokohama 4) (U.S.A. \$ p. short ton) 5)	2.50	2.50	2.50	2.50	2.70	2.75	2.05	2.41	1.98	
La Plata Down River 6) /Necochea/Bahia Blanca to U.K./Continent	13.6	13/-	13/-	14/-	14/10 ¹ / ₂	15/2	14/6	14/1	14/-	
La Plata Up River 7) to U.K./Continent	14/9	14/-	14/-	15/3	16/3 ¹ / ₂	16/4 ¹ / ₂	16/2	15/9	15/10	
Western Australia to U. K./Continent	n. 22/-	n. 22/6	23/6	24/6	24/10	24/9	25/10 ¹ / ₂	23/10 ¹ / ₂	24/6 ¹ / ₂	
Shipments of Rice.										
								1934	1933	
Saigon to Europe (shill. per Burma to U.K./Continent . . . long ton)	n. q.	n. q.	n. q.	n. q.	n. q.	22/10 ¹ / ₂	26/6	24/2 ¹ / ₂	23/5 ¹ / ₂	
	22/6	22/6	22/6	n. q.	n. q.	* 23/10	24/2	* 23/3	* 23/1 ¹ / ₂	

* Indicates that the product, during part of the period under review, was not quoted. — n. q. = not quoted. — n. = nominal. — a) Average prices for weeks beginning on Fridays indicated. — b) Average prices for weeks beginning on preceding Mondays. — c) Thursday prices. — d) Prices of preceding Monday.

1) See note on p. 307 of the *Crop Report* for April 1934. — 2) From Nov. 1933, 57/52 grams each. — 3) Rates for entire cargoes; see note on p. 307 of the *Crop Report* for April 1934. — 4) Rates for parcels by liners. — 5) May-Oct. 1934 and from 25 Jan. 1935: Canadian 8. — 6) "Down River" includes the ports of Buenos Aires and La Plata. — 7) "Up River" includes the ports on the Paraná River as far as San Lorenzo. Cargoes from ports beyond San Lorenzo (Colastine, Santa-Fé and Paraná) are subject to an extra rate of freight. — 8) From 31 Dec. to 5 Jan. and from 7 to 12 Jan.: 135.00; from 14 to 19 Jan.: 130.00. — 9) Freight in U.S.A. \$ per 100 lb.

EXCHANGE RATES

OF DIFFERENT CURRENCIES IN RESPECT TO THEIR PARITY WITH THE SWISS FRANC (1)

NATIONAL CURRENCIES	Exchange rates				Percentage bonus (+) or loss (-)			
	15 Feb. 1935	8 Feb. 1935	1 Feb. 1935	25 Jan. 1935	15 Feb. 1935	8 Feb. 1935	1 Feb. 1935	25 Jan. 1935
Germany: free reichsmark.	124.025	124.000	124.050	123.875	+ 0.5	+ 0.4	+ 0.5	+ 0.3
Argentina: paper peso †)	94.219	94.656	94.531	95.075	- 57.2	- 57.0	- 57.0	- 56.8
Belgium: belga.	72.100	72.075	72.000	72.100	+ 0.1	0.0	- 0.1	+ 0.1
Canada: dollar	3.085	3.100	3.100	3.115	- 40.5	- 40.2	- 40.2	- 39.9
Denmark: crown	67.300	67.500	67.450	67.900	- 51.5	- 51.4	- 51.4	- 51.1
Spain: peseta	42.200	42.200	42.200	42.200	- 57.8	- 57.8	- 57.8	- 57.8
Egypt: pound 2)	15.075	15.145	15.125	15.212	- 40.2	- 40.0	- 40.0	- 39.7
United Kingdom: pound sterling	3.089	3.102	3.102	3.113	+ 0.9	+ 1.3	+ 1.3	+ 1.7
United States: dollar	20.379	20.377	20.380	20.377	+ 0.4	+ 0.4	+ 0.4	+ 0.4
France: franc	55.925	56.500	57.375	58.000	- 38.3	- 37.7	- 36.7	- 36.0
Indo-China: piaster 3)	114.068	114.597	114.446	114.851	- 39.7	- 39.4	- 39.5	- 39.3
Hungary: pengő 4)	26.260	26.245	26.355	26.375	- 3.7	- 3.8	- 3.4	- 3.3
Italy: lira	88.126	88.535	88.418	88.927	- 65.9	- 65.7	- 65.8	- 65.6
Japan: yen †)	208.775	208.875	209.050	208.900	+ 0.2	+ 0.3	+ 0.4	+ 0.3
Netherlands: florin	58.300	58.300	58.300	58.300	+ 0.3	+ 0.3	+ 0.3	+ 0.3
Poland: zloty	n. 3.080	n. 3.080	n. 3.080	n. 3.080	- 0.6	- 0.6	- 0.6	- 0.6
Rumania: leu	77.700	78.050	78.000	78.400	- 44.1	- 43.8	- 43.8	- 43.6
Sweden: crown	12.905	12.910	12.920	12.925	+ 0.9	+ 0.9	+ 1.0	+ 1.0
Czechoslovakia: crown								

1) The exchange rate represents the value of 100 units of the national currency (for the dollar and the pound sterling 1 unit) expressed in Swiss francs, as far as possible on the Zurich Exchange. With regard to the currencies marked thus (†) a conversion has been made; the original exchange rates on London being converted into Swiss francs by means of the rate of the £ in Zurich. — 2) As the relation between the Egyptian pound and the pound sterling remains unchanged, the exchange rate of the latter only is given. — 3) As the relation between the Indo-Chinese piaster and the French franc changes only slightly, the exchange rate of the latter only is given. — 4) Bank notes.

VARIATIONS IN THE INDEX-NUMBERS OF PRICES

On the following pages the index-numbers of prices of agricultural products and other price-indices of interest to the farmer are given as published in the different countries. Owing to the substantial divergence, which often exists in the value and significance of the data available, it has been considered opportune to reproduce all the data in their original form only, without attempting formally to unite them.

In addition to the original data summary tables are given below.

Percentage variations in the index-numbers for January 1935

COUNTRIES	Comparison with December 1934		Comparison with January 1934	
	Index-numbers of prices of agricultural products	Index-numbers of wholesale prices in general	Index-numbers of prices of agricultural products	Index-numbers of wholesale prices in general
Germany	+ 0.2	0.0	+ 0.8	+ 5.0
England and Wales	+ 0.3	+ 1.0	+ 5.0	+ 1.3
Argentina	- 1.9	-	+ 6.6	-
Canada	- 0.3	+ 0.4	+ 11.0	+ 1.3
United States: Bur. of Agric. Economic	+ 5.9	-	+ 39.0	-
United States: Bur. of Labor	+ 7.8	+ 2.5	+ 32.2	+ 9.1
Finland	- 1.3	+ 0.0	+ 4.2	+ 0.0
Hungary	+ 4.2	+ 1.2	+ 36.4	+ 21.1
Italy	- 0.2	+ 0.4	+ 9.5	+ 0.9
New Zealand	+ 1.9	- 1.3	- 6.9	-
Netherlands	- 2.0	+ 1.3	- 9.1	- 0.9
Poland . . . . .	...	...	...	...
Yugoslavia:				
plant products	+ 8.6	+ 3.4	+ 18.4	+ 2.4
livestock products	+ 5.0		+ 1.4	

INDEX-NUMBERS OF PRICES OF AGRICULTURAL PRODUCTS AND OF COMMODITIES BOUGHT BY THE FARMER ¹⁾

DESCRIPTION	Jan.	Dec.	Nov.	Oct.	Sept.	Aug.	Jan.	Jan.	Year	
	1935	1934	1934	1934	1934	1934	1934	1933	1934	1933
Germany										
(Statistisches Reichsamt)										
1913 = 100.										
Foodstuffs of plant origin	113.2	112.9	112.7	112.2	112.9	115.7	101.1	95.7	108.7	98.7
Livestock	76.2	76.8	78.5	79.3	76.9	73.4	69.8	57.9	70.9	64.3
Livestock products	108.8	109.5	110.5	109.1	106.0	104.0	108.7	87.5	105.0	97.5
Feeding stuffs	105.2	105.0	104.7	105.1	105.8	108.7	94.4	81.9	102.0	86.4
Total agricultural products	100.3	100.5	101.1	100.9	99.8	99.6	92.9	80.9	95.9	86.8
Fertilizers ¹⁾	67.0	65.3	65.0	68.4	68.4	67.9	69.5	72.6	68.6	70.2
Agricultural dead stock	111.0	111.0	111.0	111.2	111.3	111.4	111.0	112.5	111.1	111.6
Finished manufactures ("Konsumgüter")	123.5	122.5	122.1	120.8	118.4	116.7	114.2	111.4	117.3	111.7
Wholesale products in general	101.1	101.0	101.2	101.0	100.4	100.1	96.3	91.0	98.4	93.3
England and Wales										
(Ministry of Agriculture and Fisheries)										
Average for corresponding months										
of 1911-13 = 100.										
Agricultural products ²⁾	125	121	121	122	126	123	119	111	119	111
Feeding stuffs	98	98	96	98	102	101	82	92	91	85
Fertilizers	88	89	89	88	89	89	90	90	90	90
Wholesale products in general ³⁾	98.4	97.4	95.3	95.4	96.6	98.1	97.1	91.5	96.3	93.7
Argentina										
(Banco de la Nación Argentina)										
1926 = 100.										
Cereals and linseed	68.8	71.1	69.2	71.8	78.7	83.9	58.8	53.8	68.1	54.4
Meat	82.1	83.5	83.4	81.2	80.0	80.0	75.9	55.2	78.5	65.9
Hides and skins	75.4	73.0	69.6	67.5	65.3	59.6	86.3	54.5	71.6	63.9
Wool	68.0	68.3	72.9	80.4	80.5	82.2	105.3	42.1	84.3	54.6
Dairy products	66.8	66.4	65.5	68.4	68.1	68.2	53.3	53.9	62.3	57.4
Forest products	84.4	87.9	70.1	70.2	71.6	71.6	74.8	70.9	73.1	72.5
Total agricultural products	71.1	72.5	70.8	72.9	77.0	80.0	66.7	53.5	70.5	56.9
Canada										
(Internal Trade Branch										
of the Dominion Bureau of Statistics)										
1926 = 100.										
Field products (grain, etc.)	55.7	56.0	55.7	55.3	58.9	60.7	47.9	34.8	53.9	45.7
Livestock and livestock products	71.0	70.9	70.4	70.4	65.3	63.1	67.8	58.3	67.6	59.6
Total Canadian farm products	61.4	61.6	61.2	60.9	61.3	61.6	55.3	43.6	59.0	51.0
Fertilizers	75.8	75.8	75.8	75.8	74.6	74.6	76.2	72.3	76.2	73.8
Consumers' goods (other than foodstuffs, etc)	77.3	76.7	76.7	76.9	77.3	77.2	77.6	76.6	77.2	76.0
Wholesale products in general	71.5	71.2	71.2	71.4	72.0	72.3	70.6	63.8	71.6	67.2

¹⁾ For an explanation of the method of calculation of the index-numbers, reference should be made to the Institute's publication *Index-numbers of Prices of Agricultural Products and other Price-indices of Interest to the Farmer* (Rome, 1930) as well as to the *Crop Report* (January 1932, pages 77 to 79; July 1932, page 502; March 1934, page 231; December 1934, page 696).

²⁾ Revised index-numbers due to the Wheat-Act payments and, from September 1934, the Cattle Emergency Act-payments.

³⁾ Calculated by the *Statist*, reduced to base-year 1913 = 100.

DESCRIPTION	Jan.	Dec.	Nov.	Oct.	Sept.	Aug.	Jan.	Jan.	Year	
	1935	1934	1934	1934	1934	1934	1934	1933	1934	1933
United States										
(Bureau of Agricultural Economics)										
Average 1909-10 to 1913-14 = 100.										
Cereals	115	116	109	109	112	106	76	35	93	62
Cotton and cottonseed	108	109	107	107	110	107	82	45	99	64
Fruits	87	85	94	98	93	101	86	70	100	74
Truck crops (market garden crops)	117	130	107	110	110	108	102	91	102	105
Meat animals	96	73	72	74	82	68	55	51	68	60
Dairy products	112	107	105	100	99	97	84	81	96	82
Chickens and eggs	114	119	125	108	104	86	82	95	89	75
Miscellaneous	112	113	123	137	129	125	94	68	108	83
Total agricultural products	107	101	101	102	103	96	77	60	90	70
Commodities purchased 1)	126	126	126	126	126	125	118	102	122	109
Agricultural wages 1)	86	—	—	93	—	—	81	74	88	80
United States										
(Bureau of Labor)										
1926 = 100.										
Cereals	88.8	91.5	87.2	85.0	88.1	86.0	63.7	32.9	74.5	53.1
Livestock and poultry	73.3	57.2	54.0	55.3	64.1	56.2	41.1	37.8	51.5	43.4
Other farm products	76.6	75.1	75.8	75.4	74.4	73.1	67.4	48.7	70.5	55.8
Total agricultural products	77.6	72.0	70.8	70.6	73.4	69.8	58.7	42.6	65.3	51.4
Agricultural implements	92.7	92.7	91.9	92.0	92.0	92.0	85.2	84.5	89.6	83.5
Fertilizer materials	66.5	65.3	64.6	65.7	66.4	64.8	68.4	62.3	67.1	65.9
Mixed fertilizers	73.3	75.4	73.5	73.0	73.0	73.0	71.2	62.7	72.5	64.5
Cattle feed	116.2	123.1	108.2	97.6	100.7	104.0	68.5	38.2	89.4	57.9
Non-agricultural commodities	78.9	77.8	77.7	77.6	78.4	77.8	75.0	64.9	76.9	69.0
Wholesale products in general	78.8	76.9	76.5	76.5	77.6	76.4	72.2	61.0	74.9	65.9
Finland										
(Central Bureau of Statistics)										
1926 = 100.										
Cereals	80	79	78	81	86	86	81	89	82	88
Potatoes	68	56	56	51	51	42	47	78	49	77
Fodder	64	64	64	63	61	63	85	69	72	72
Meat	76	73	70	70	74	74	66	63	71	64
Dairy products	82	86	88	80	76	75	69	73	75	75
Total agricultural products	75	76	76	74	74	73	72	73	73	74
Wholesale products in general	90	90	90	90	90	90	90	90	90	89
Hungary										
(Central Bureau Statistics)										
1913 = 100.										
Agricultural and livestock products	75	72	71	70	71	69	55	71	—	—
Wholesale products in general	86	84	83	82	83	81	71	82	—	—
Italy										
(Consiglio Provinciale dell'Economia Corporativa di Milano)										
1913 = 100.										
National agricultural products	315.6	316.2	314.9	313.4	308.8	305.3	288.1	314.7	297.9	280.7
Wholesale products in general	280.2	279.2	277.2	276.4	275.5	274.8	277.6	296.5	275.8	283.4
New Zealand										
(Census and Statistics Office)										
Average 1909-13 = 100.										
Dairy products	77.8	78.3	76.3	75.1	84.0	82.4	76.6	82.7	77.5	84.0
Meat	162.5	163.6	147.6	151.8	153.4	151.6	149.8	123.0	152.2	120.7
Wool	79.5	75.0	73.4	104.1	104.1	104.1	128.6	61.1	110.0	69.8
Other pastoral products	76.1	77.9	81.7	77.1	80.4	85.1	88.8	59.8	80.2	74.5
All pastoral and dairy products	100.4	98.9	93.9	101.7	106.2	105.4	108.7	85.0	104.5	88.4
Field products	126.3	121.5	121.4	120.4	123.1	122.0	114.1	116.4	120.6	115.8
Total agricultural products	101.2	99.3	94.4	102.0	106.4	105.6	108.8	85.8	104.7	89.2

1) 1910-1914 = 100.

DESCRIPTION	Jan. 1935	Dec. 1934	Nov. 1934	Oct. 1934	Sept. 1934	Aug. 1934	Jan. 1934	Jan. 1933	Year	
									1933-34	1932-33
Norway										
(Kegl. Selskap for Norges Vel)										
Average 1909-14 = 100.										
Cereals	141	137	136	139	141	134	103	119	112	120
Potatoes	132	115	111	117	97	125	95	79	103	101
Pork	88	88	89	87	86	80	79	99	81	91
Other meat	141	136	129	137	149	149	106	106	110	109
Eggs	82	109	129	129	101	84	87	93	85	93
Dairy products	133	133	132	132	132	132	129	118	126	124
Concentrated feeding stuffs	120	121	120	117	112	103	93	103	96	104
Maize	110	110	110	114	111	100	80	89	83	90
Fertilizers	74	74	72	72	80	88	85	91	87	89
Netherlands										
(Bureau of Agriculture)										
Average 1924-25 to 1928-29 = 100.										
Plant products	54	55	58	62	68	68	60	40	59	42
Livestock products	49	49	48	48	50	51	54	50	53	51
Total agricultural products	50	51	51	52	55	55	55	48	55	49
Agricultural wages	71	71	71	71	71	71	74	83	74	8
Wholesale products in general 1)	52.8	52.8	52.1	52.1	52.1	52.8	53.3	50.7 a)	52.8 a)	50.
Poland										
(Central Bureau of Statistics)										
1928 = 100.										
Raw plant products . . . . .	...	33.2	32.3	35.6	37.2	39.1	34.4	38.1	35.6	41.1
Meat animals . . . . .	...	32.5	33.9	34.8	35.1	37.3	40.8	37.2	36.7	42.1
Dairy products and eggs . . . . .	...	43.3	47.1	39.8	36.5	36.7	44.9	49.3	41.2	46.7
Products directly sold by farmers . . . .	...	34.8	35.6	36.1	36.4	38.1	38.4	39.9	37.0	42.6
Flour and groats . . . . .	...	38.8	38.4	40.2	41.1	41.5	38.6	46.2	38.8	47.8
Meat and lardfat . . . . .	...	36.9	38.2	40.2	44.4	43.1	48.6	44.6	43.5	49.8
Sugar, alcohol, beer . . . . .	...	85.6	85.6	85.5	85.5	90.0	90.2	90.4	88.6	90.3
Products of agricultural industries . . . .	...	53.4	53.8	55.0	56.8	57.9	59.0	60.1	56.7	62.4
Total agricultural products . . . . .	...	44.0	44.6	45.5	46.5	47.9	48.6	49.9	46.8	52.4
Commodities purchased . . . . .	...	68.6	68.5	69.0	69.1	69.8	72.3	75.3	70.7	72.9
Wholesale products in general . . . . .	...	53.5	53.6	54.5	55.0	55.8	57.8	59.3	55.7	59
Yugoslavia										
(National Bank of the Kingdom of Yugoslavia)										
1926 = 100.										
Plant products	62.9	57.9	59.1	58.8	61.2	56.5	53.1	65.4	57.4	57.2
Livestock products	58.6	55.8	55.6	58.4	54.6	51.9	57.8	57.2	55.4	57.1
Industrial products	65.4	64.9	65.3	66.0	65.6	65.3	69.2	73.0	67.4	70.8
Wholesale products in general	64.4	62.3	62.7	63.6	63.2	61.1	62.9	67.6	63.2	64.4

1) Calculated by the the Central Statistical Bureau of the Netherlands, reduced to the base 1925-1929 = 100 — 2) Calendar year.

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28-11-1935.

MONTHLY CROP REPORT AND AGRICULTURAL STATISTICS

The following explanations refer to crop conditions quoted in the crop notes and in the tables. — Crop condition according to the system of the country: Germany, Austria, Hungary, Luxemburg and Czechoslovakia: 1 = excellent, 2 = good, 3 = average, 4 = bad, 5 = very bad; France: 100 = excellent, 70 = good, 60 = fairly good, 50 = average, 30 = bad; Lithuania, Poland, Sweden and Switzerland: 5 = excellent, 4 = good, 3 = average, 2 = bad, 1 = very bad; Netherlands: 90 = excellent, 70 = good, 60 = fairly good, 50 = below average; U. S. S. R.: 5 = good, 4 = above the average, 3 = average, 2 = below average, 1 = bad; Canada: 100 = crop condition promising a yield equivalent to the average yield of a long series of years; United States: 100 = crop condition which promises a normal yield; Egypt: 100 = from June 1934, crop condition which promises a yield equal to the average yield of the last five years. — For other countries the system of the Institute is employed: 100 = crop condition which promises a yield equal to the average of the last ten years.

WORLD WHEAT SUPPLIES AND REQUIREMENTS

Last October, in an attempt to compare world wheat supplies and requirements, it was estimated that the 1934 world wheat harvest was insufficient to meet probable consumption requirements in the present year, and that, consequently, stocks would have to be drawn upon to fill the gap. It was estimated from the information and data then available that the exportable stocks of wheat in existence on 1 August 1934 would be reduced during the present year by 256 million bushels.

It is intended in the present article to study the statistical situation of the world wheat market in the light of the data and information which have come to hand subsequently.

I. — WORLD WHEAT PRODUCTION.

Since October several countries have revised their estimates of production, while most of those which had not issued their estimates, and for which tentative figures were calculated, have now communicated their harvest results to the Institute.

If the crops of the U. S. S. R., China, Turkey and those of some minor producing countries, which issue their production statistics irregularly or belatedly, are excluded, the estimates now to hand cover nearly 99 % of the world outturn. The approximation of these estimates to the final results may be considered, on the whole, to be fairly close. In the last three years margins of from 1 to 3 % have been observed between the preliminary estimates of March and the final figures of world production. It should be added, however, that in these three years the preliminary statistics have shown under-estimates.

The changes made by the new evaluations in the estimates published in October and the corrections in the preliminary figures are numerous and, in several cases, substantial.

In the group of European importing countries an increase of 38 million bushels is to be observed. All the countries in this group, with the exception

of Sweden, have made upward revisions in their estimates since October. The most important increases are those of France (about 24 million bushels), Germany (6 million), and the United Kingdom (3 millions).

In the group of European exporting countries, increases in the Romanian (3 million bushels) and Lithuanian (about 1 million) estimates must be set against reductions in the evaluations of Bulgaria (4 million) and Yugoslavia (5 million). The total of this group thus shows a decrease of 5 millions bushels.

Total European production is thus 33 million bushels greater than the total arrived at in October. In the case of several countries only first estimates of the harvest are available and the present total may thus undergo further modification, but the possible difference will probably be less than that of 40 million bushels, which occurred last year between the March estimate and the final result. An upward revision of at most 15 to 20 million bushels of the total now arrived at seems to be the most warrantable expectation.

In North America, the latest estimates made by Canada and the United States practically confirm the provisional estimates of October but involve slight reductions which, for the two countries taken together, amount to a total of 3 million bushels.

World Wheat Production (1)

(Million bushels).

Years	Europe			North America	South America	Asia 1)	Africa	Oceania	Total	U.S.S.R.
	Importing countries	Exporting countries	Total							
Average 1923-27 . . .	920	323	1,243	1,210	275	402	108	143	3,381	676
1928	977	433	1,409	1,491	399	342	116	168	3,925	807
1929	1,071	378	1,449	1,139	221	384	136	134	3,463	694
1930	915	445	1,360	1,322	273	459	115	221	3,750	989
1931	974	462	1,435	1,270	264	407	131	197	3,704	753
1932	1,212	280	1,492	1,197	286	393	140	224	3,732	744
1933	1,292	455	1,747	823	347	420	121	185	3,643	1,019
1934 { October forecast	1,150	327	1,477	786	294	426	136	147	3,266	...
March estimate .	1,188	322	1,510	783	305	426	150	142	3,316	...

1) Not including China, Iran (Persia), Turkey and Iraq.

The preliminary figures available at present for South America exceed the conjectural estimates made in October by only 11 million bushels. It appears, however, that the first official estimate of the Argentine crop did not make sufficient allowance for the damage resulting from the bad weather experienced in some areas during the final stage of ripening. Estimates made in commercial quarters are from 20 to 30 million bushels smaller.

The estimate made in Australia in October has been slightly reduced by 2 million bushels. The small output of New Zealand is also smaller than that anticipated. In all the reduction in the estimates of these two countries from the October figure is about 5 million bushels.

It should be remembered, however, that the present estimates of the crops in the southern hemisphere are of a preliminary character and that, in the case of several South American countries, owing to the absence of official estimates, approximate calculations had to be made. The final results, consequently, may involve changes in the totals now issued.

The figures for Asia remain the same while the total of the African crop has been increased by the substantial amount of 14 million bushels as a result of the good crop obtained in the Union of South Africa and, more particularly, of the increase made in the estimate of French Morocco.

To sum up, the latest estimates confirm that the 1934 world wheat crop, excluding that of the U. S. S. R., China, Turkey and Iran (Persia), is the smallest recorded since 1924.

It appears to be 327 million bushels, or 9 %, smaller than that of 1933 and 400 million, or 11 %, below the average of the five years 1928 to 1932. The total has been particularly affected by the poor results obtained in all the great exporting countries. The North American crops were the smallest harvested for a long series of years and were even below the pre-war averages. The harvest of the Danube countries was the smallest obtained since 1924 with the exception of the disastrous failure of 1932 following rust attacks. That of Australia is the smallest obtained in the last five years. That of Argentina, as estimated at present, is about average or slightly above average.

Official estimates of the 1934 outturn in the U. S. S. R. have not yet been issued and there are always discrepancies in the various assessments, the crop being considered plentiful by the official authorities of the country and poor or mediocre in commercial quarters. There are consequently no grounds for modifying the view of the crop put forward last October in the following terms: U. R. S. S. wheat production this year is very irregular from place to place. On the whole, it is appreciably smaller than that of 1933, but so far from being poor, or still less, a failure, it approximates to the average without perhaps quite reaching it. The estimate of Mr. Cairns, the Secretary of the Wheat Advisory Committee, which indicates a crop of 775 million bushels against the 1928-32 average of 797 millions, seems to confirm this expectation.

II. — EXPORTABLE SUPPLIES OF WHEAT.

To calculate the quantities exportable from the surplus-producing countries the amounts necessary for internal consumption and for normal carryover, that is, the reserves necessary for the gap between one season and the other — hitherto taken as equivalent to one month's normal consumption — have been subtracted from the total supplies existing in each country, but the quantities remaining at the end of the season in the exporting countries, especially in those of North America, have never, even in years of heavy external demand, sunk to the low level at which they have hitherto been placed. Thus, to bring the statistical expression of the situation into closer conformity with reality, we are from this year changing the criterion we have so far adopted for the calculation of quantities

* St. 3 *Ingl.*

exportable, substituting for the minimum theoretical carryover equivalent to one month's consumption the minimum carryover actually found in a long series of years; owing to this modification the data we now publish for quantities exportable and for exportable stocks remaining in exporting countries at the end of the season constitute a series entirely different from that published in previous Crop Reports. The situation as regards quantities exportable in the various groups of exporters is as follows.

North America. — In the United States the final crop estimate has involved only an insignificant modification of the estimate published last October. As regards internal consumption, which we have estimated at 625 million bushels, an increase of about 5 % on that of the preceding year, it appears that our estimate must undergo a further, though slight, increase: the internal prices of wheat have in fact fallen since September; the margin of superiority that existed with reference to the prices of maize was thus very much reduced and this stimulated the greater utilization of wheat for feed in a year of great scarcity in fodder cereals. At the end of last December the Bureau of Agricultural Economics of the Department of Agriculture at Washington estimated the internal consumption of wheat for the United States in the current season at 655 million bushels. Stanford University confirmed in January its September estimate of 641 millions and Mr. Cairns, Secretary of the Wheat Advisory Committee, recently raised his November estimate from 635 to 651 million bushels; between these authorities there are therefore only negligible differences. Adopting for consumption the official figure of 655 million bushels and for minimum carryover the lowest figure of the last ten years, namely 105 millions in 1926, the quantity necessary for internal requirements this season is 760 million bushels. The 1934 crop having amounted to 496 million, there remains to be met a deficit of 264 million bushels. Deducting from the total stocks existing at the beginning of the season, estimated at 310 millions, the deficit of 264 millions, the amount available in the United States for export in 1934-35 is 46 millions against 237 millions in 1933-34 and an average of 360 millions in the five preceding years.

For Canada the final estimate of the crop, published in January, is almost the same as that published in October, there being a practically negligible decrease; the total supplies (276 millions of production and 203 millions of stocks) are 479 millions bushels. As for internal requirements, we retain without change the estimate of 110 million bushels adopted in October for internal consumption. This amount is practically the same as that in the preceding season and there are no reasons to expect any appreciable change, whether in the quantities absorbed for human food, or in those for feed and seed; this estimate coincides, too, almost perfectly with the estimates recently published by the Canadian Department of Agriculture (106 millions), Stanford University (109 millions) and the Secretary of the Wheat Advisory Committee (109 millions). For the carryover at the end of the season we adopt as for the United States the minimum carryover of the last ten years, 26 million bushels (1925) and the total internal requirements of Canada are therefore 136 million bushels; deducting these requirements from

the total supplies, the amount available for export in the current season is 343 millions against 366 millions in 1933-34 and 388 millions on the average of the five years ending 1932-33.

Argentina and Australia. — For Argentina, in default of an official estimate, an approximate figure of 240 million bushels had been taken for the production, and stocks on 1 August 1934 had been calculated at 96 million bushels; the surplus available for export in 1934-35, after deduction of 90 millions for internal consumption, was thus 246 million bushels. The first official estimate of production gave a figure of 252 million bushels; the second estimate has not yet been published but it is generally believed that, contrary to what occurred last year, there will be a reduction on the volume as previously forecast; the reductions indicated by commercial sources vary from 20 to 30 million bushels (1).

As regards stocks in Argentina on 1 August 1934, export figures from 1 August to 31 December 1934 (73.4 million bushels) and the amount remaining in the country at the beginning of the new harvest (15.5 millions), show a total nearly 7 millions smaller than the amount of the calculated stocks. It is highly probable that this difference indicates an overestimation of last year's Argentine crop as given in the last statistics.

Taking account of the various elements there is room for a slight decrease in the surplus exportable from Argentina in the current season, from 246 to 230 million bushels; Argentina would thus have exportable supplies almost the same as those of the past season (236 millions) but a little above the previous five-year average (209 millions).

For Australia the crop is stated to be slightly smaller than that forecast in October, which has been lowered from 137 to 135 million bushels. Stocks on 1 August being calculated at 77 million total supplies for the current season are 212 million bushels. Deducting 50 million for internal requirements, the exportable surplus of Australian wheat for 1934-35 is 162 millions; this surplus would be practically the same as both that of last year and the five-year average.

India. — As the October forecast indicated, the volume of the 1934 crop corresponded perfectly with the internal requirements of the country and only insignificant quantities were put on the world market. The new crop, which will be harvested next month, though covering an area slightly smaller than that of 1934, may give a higher outturn, weather having been more favourable than a year ago. It is, therefore, not impossible that India may reappear on the world market during the closing months of the year, but, if world prices remain at the present level, Indian competition will be limited to small quantities, particularly in view of the rather poor rice harvest.

U. S. S. R. — Any forecast of the exportable Soviet wheat supplies in a given year is generally pure guesswork, for statistics generally are lacking,

(1) While the present Crop Report was in the press, the Institute received a cable from the Argentine Government intimating that the second estimate of wheat production was 238 millions bushels.

internal consumption varies greatly and the commercial policy of the Government plays an important part in the determination of the volume of exports.

In October last in the absence of reliable statistical information on the 1934 harvest, the opinion was expressed that Soviet exports would only with difficulty exceed 15 million bushels, thus falling far short of the quantity exported in 1933-34. The Secretary of the Wheat Advisory Committee made a forecast in August of 10 million bushels, while Stanford University in its September estimate gave an amount slightly below 15 million bushels. Recent official statistics of Soviet exports are unavailable, but the statistics on shipments prepared by Mr. Broomhall, which are usually smaller than those actually issued by the Soviet Government, place total exports at barely 1.7 million bushels for the period 1 August-23 March, which covers nearly two thirds of the year, while in the corresponding period a year ago, the shipments, according to the same authority, reached 26 million bushels. No exports were recorded after the middle of December. The reduced quantity and the early cessation of exports suggest that the total contribution of Russia to the world wheat trade will hardly reach 3 million bushels during the present year.

European exporting countries. — As a result of the reductions in the harvest estimates of Bulgaria and Yugoslavia, which exceed the increases in those of Romania and Lithuania, the total outturn in 1934 of this group of countries, including the Danube countries, Poland and Lithuania, is reduced from 327 to 322 million bushels. At the same time, the rye and maize crops, which are used to a great extent for human consumption, fulfilled the October anticipation in the case of rye and proved to be much more plentiful in the case of maize. Notwithstanding the poor wheat outturn in 1934, an export surplus of about 20 million bushels was forecast for this group having regard not only to the large stocks on hand at the beginning of the season but also to the financial necessity of these countries for the preservation of the balance in their international payments. Up to the end of January, 11 million bushels of this surplus had been exported, most of this quantity consisting of Hungarian or Yugoslav wheat. No shipments were made by Romania and Bulgaria, which had prohibited exports during the first part of this year. The reasons for the prohibition lost their force when a good maize crop became assured and it is probable that shipments of Bulgarian and Romanian wheat will be resumed in the spring. The conclusion of agreements and conventions for preferential treatment for the placing of Hungarian wheat in Italy and Austria, of Romanian wheat in Czechoslovakia and Germany, and of Yugoslav wheat in Austria and Germany, is likely to assist in the disposal of Danubian wheat in the last months of the season, when exports, however, will be influenced by the prospects of the new crop in these countries. When account is taken of these various elements, of the trend of Danubian exports during the first six months of the year, of the possibility of disposing of some wheat in the neighbouring countries, and of the good condition of the growing crops, it appears probable that the whole exportable surplus of 20 million bushels will actually be exported during the course of the year, unlike the experience of last year when out of an exportable surplus of 55 million bushels only 37 million bushels could be disposed of abroad.

North Africa and other countries. — Of the three exporting countries of North Africa, Algeria and Tunisia have modified their estimates of production only to a negligible extent while Morocco has lately increased its estimate very considerably, raising it from 31 million to 39 million bushels; save in Tunisia, where it has been bad, production of barley appears definitely good in Algeria and excellent in Morocco.

In October we calculated the exportable surplus of North African wheat at 40 million bushels and the actual exports this season at only 24 million bushels, a result of the present difficulties of placing wheat on the metropolitan market. These forecasts should in all probability be maintained, despite the increase in supplies in Morocco, since the difference between the prices of wheat and barley favours larger internal consumption of wheat and more considerable exports of barley.

For the group of other surplus-producing countries, Turkey, Iran (Persia), Iraq, Chile and Uruguay, for which we calculated an export surplus of 6 million bushels, it would appear necessary to reduce the total, the majority of these countries having had crops smaller than was forecast in October, and especially the two of South America. For these countries of North Africa and elsewhere taken together the exportable surplus of wheat, calculated in October at 46 million bushels, is thus reduced to 42 million.

Summarizing, the supplies available to meet the demand of the importing countries in the current season are estimated as follows, in comparison with the forecast made last October and the data of preceding years.

Exportable supplies of wheat.
(million bushels).

SEASONS	Canada	United States	Argentina	Australia	U.S.S.R.	India	Danubian countries (1)	North Africa (2)	Afloat	Totals
1926-27	321	220	195	130	49	11	44	2	39	1,011
1927-28	387	229	246	96	3	8	31	15	46	1,061
1928-29	496	317	331	136	0	0	34	18	45	1,377
1929-30	292	362	186	100	10	0	55	20	37	1,062
1930-31	383	343	173	200	113	0	50	22	39	1,323
1931-32	319	431	172	192	64	2	84	26	38	1,328
1932-33	452	347	184	192	19	0	13	21	30	1,258
1933-34	366	237	236	162	32	0	55	24	32	1,144
1934-35:										
October 1934, Forecast .	345	75	246	164	15	0	20	46	34	945
March 1935, Estimate .	343	46	230	162	3	0	20	42	34	880

1) Including Poland and Lithuania. — 2) Including the other minor exporting countries.

Excepting the Danubian countries, for which the export surplus is unchanged, the figures calculated in October have undergone modifications for all countries, which, though for the most part small, together involve a total reduction of about 60 million bushels in the world export surplus; this also appears from the forecasts already made, to be the smallest experienced in the last ten years, being 264 million bushels (23 %) less than that of last year and 497 million (36 %) less than the maximum of 1928-29.

Of the large exporting countries, only the United States show a marked decrease in their surplus from the figure of last year; the others have practically the same quantities as last year. Of the minor exporters, only North Africa shows an increase in supply while the U. S. S. R. and the Danubian countries have heavily reduced their supplies.

In the first half of the current season (from 1 August 1934 to 31 January 1935) the international movement of wheat was a little smaller than in the first half of last season, the total exports of the surplus-producing countries having been 264 million bushels against 282 million in 1933-34.

World net exports of wheat (including flour in terms of wheat)

(Million bushels)

Months	1934-35	1933-34	1932-33	1931-32	1930-31	1929-30
August	51	45	41	66	77	71
September	41	51	48	78	74	57
October	50	46	62	74	84	60
November	42	41	54	67	77	51
December	38	51	60	64	59	50
January	42	48	62	62	54	48
February	—	44	64	73	70	45
March	—	50	64	74	67	50
April	—	35	40	70	62	42
May	—	44	52	67	81	50
June	—	45	42	59	67	51
July	—	46	44	45	52	53
<i>Total Season</i>	<i>...</i>	<i>546</i>	<i>633</i>	<i>799</i>	<i>824</i>	<i>628</i>
<i>Total August-January</i>	<i>264</i>	<i>282</i>	<i>327</i>	<i>411</i>	<i>425</i>	<i>337</i>

Comparing the quantities exportable from each country with the actual exports during the first six months, the balance exportable on 1 February was as follows.

Exportable surplus of wheat at the beginning and at the middle of the season.

(million bushels)

	Season 1934-35			Season 1933-34		
	Total exportable surplus	Exports from August to January	Exportable remainder on 1st February	Total exportable surplus	Exports from August to January	Exportable remainder on 1st February
Canada	343	91	252	366	109	257
United States	46	1) 2	48	237	15	222
Argentina	230	91	139	236	54	182
Australia	162	54	108	162	42	120
U. S. S. R.	3	2	1	32	29	3
India	0	0	0	0	0	0
Danubian countries	20	11	9	55	21	34
North Africa	42	17	25	24	12	12
<i>Total</i>	<i>846</i>	<i>264</i>	<i>582</i>	<i>1,112</i>	<i>282</i>	<i>830</i>
<i>Alloaf</i>	<i>34</i>	<i>—</i>	<i>34</i>	<i>32</i>	<i>—</i>	<i>32</i>
<i>General total</i>	<i>880</i>	<i>—</i>	<i>616</i>	<i>1,144</i>	<i>—</i>	<i>862</i>

1) Net imports deducted from the totals.

The United States, though having available supplies larger than their internal needs, were on balance importers in order to meet their requirements of hard wheats and fodder cereals; their absence from the international market as sellers is due not to an absolute shortage of exportable supplies but to the level of their internal prices.

The United States and the U.S.S.R. being outside the market, the exportable surplus remaining at the end of the sixth month of the current season was almost entirely concentrated in Canada, Argentina and Australia, Canada having itself a quantity larger than that of the two other countries together; Australia and Argentina and especially the latter had on 1 February 1935 exportable supplies smaller than those on 1 February 1934, while Canada had supplies almost the same. On the whole the exportable supplies on 1 February were nearly 250 million bushels smaller than those of 1934.

III. — REQUIREMENTS OF IMPORTING COUNTRIES.

European Importing Countries. — The wheat requirements of the European importing countries in the present year were estimated in October to amount to 430 million bushels, or about 40 million more than the greatly reduced requirements of the preceding year. It has already been pointed out that since October the crop estimates of several important European countries have been increased, those of France,⁴ Germany and the United Kingdom in particular, and that, in all, these revisions result in an increase of 38 million bushels in the resources of these countries.

Moreover, none of the other factors (size of the other food crops, restrictions on international trade etc.), on which the forecast of European wheat requirements was based, has undergone any significant modification likely to result in an increase in demand. On the contrary, in several countries, the restrictive measures and the obstacles to trade have been intensified and made stricter and more rigid.

If account is taken of the very good harvest results and of the further restrictions imposed on international trade, the estimates of the probable European importations will have to be revised, especially so since the trend of imports in the first six months of the year indicates that these are, on the whole, smaller in volume than last year and rather smaller than was anticipated.

Net imports of wheat into Europe.

(million bushels).

Year	First six months (August-January)	Last six months (February-July)	Total for the year
1927-28	328	328	656
1928-29	319	338	657
1929-30	275	239	514
1930-31	315	301	616
1931-32	295	319	614
1932-33	216	233	449
1933-34	194	198	392
1934-35	182	...	...

The following table shows the revised estimates of import requirements in the present year for each of the importing countries compared with the forecasts made six months ago. The actual imports of the same countries during the first six months and the balance to be imported to cover the anticipated requirements are also shown.

Estimates of wheat import requirements in European importing countries.

(million bushels)

Countries	Estimates of import requirements in 1934-35		Actual net imports from August 1934 to January 1935	Probable import requirements from February to July 1935
	October Forecast	March Revised Estimate		
Germany	18	15	7	8
Austria	15	10	4	6
Belgium and Luxemburg	45	46	22	24
Denmark	16	19	11	8
Spain and Portugal	0	0	0	0
Estonia, Finland, Latvia	4	4	2	2
France	0	1) 20	1) 5	1) 15
British Isles	230	225	104	121
Greece.	10	10	5	5
Italy	22	15	3	12
Netherlands	20	22	11	11
Sweden and Norway	8	9	5	4
Switzerland	22	22	10	12
Czechoslovakia	15	8	0	8
Malta, Albania, etc.	5	5	3	2
<i>Total . . .</i>	<i>430</i>	<i>390</i>	<i>182</i>	<i>208</i>

1) Net exports, deducted from the total.

The estimate of the probable requirements of Europe is thus reduced by from 430 to 390 million bushels, a decrease of 40 millions on the October forecast.

It should be observed that a considerable part of this reduction is to be attributed to the situation in France, which has become temporarily an exporter of wheat. In October it was expected that exports of French wheat and imports from North Africa would balance each other exactly. The heavy volume of the internal supplies of France has given rise to insuperable difficulties as the 1934 crop proved to be much greater than the first estimates indicated and this country was obliged to place part of its surplus on the external market. At the last meeting of the Wheat Advisory Committee, held in Budapest last November, France obtained the agreement of the other exporting countries to an export quota of 33 million bushels, two thirds of which was to be denatured wheat. However, in view of the difficulties of disposing of denatured wheat and the volume of

North African shipments to the French market, it seems doubtful whether net exports of French wheat will exceed a total of 20 million bushels in the course of the present season

The decrease in the import requirements of Germany and the United Kingdom is the outcome of the good harvest results in these countries, while in Italy and Czechoslovakia it is due to the carryover from last year which appears to have been greater than was expected.

The expected reduction in Austrian requirements is due to the fact that in this country rye imports fills part of the wheat requirements.

The increase in the amounts attributed to Belgium, Denmark and the Netherlands is due to the increasing use of fodder wheat in place of rye, imports of which into these three countries have shown a weakening this year.

The reduction thus made in the first estimate of the probable requirements of the various European countries amounts to 40 million bushels. It is to be observed that the estimates of the probable European demand made at the beginning of the season by the best qualified authorities have also been revised, and an appreciable reduction is made in each case.

Principal estimates of European wheat requirements.

(million bushels)

UNITED STATES DEPARTMENT OF AGRICULTURE.		BROOMHALL (shipments).	
September estimate.	450	July estimate.	440
October "	440	August "	448
January "	400	November "	448
		February "	416
WHEAT ADVISORY COMMITTEE.		INTERNATIONAL INSTITUTE OF AGRICULTURE.	
August estimate.	465	October estimate.	430
November "	440	March "	390
March "	400		

If this figure of probable imports of 390 million bushels is added to a production of 1,188 millions, the apparent consumption of the European importing countries would amount to about 1,580 millions, a total slightly smaller than the average of recent years. This conclusion seems to confirm the opinion that several countries, at the end of the year, will be holding stocks reduced to a normal level, and, in some cases, below it. In some countries, however, stocks will still be heavy on 1 August 1935.

Extra-European importing countries. — For this group of countries it was expected in October, taking into account the growth of demand mostly in China, Manchukuo and Egypt, that imports would be around 180 million bushels, an increase of about 30 millions on the total imported in 1933-34.

For China the main cause of the increase in the demand for wheat despite the relatively large crop in 1934 was the smallness of the rice crop, which was

greatly reduced by drought in several important areas of production; admitting that the deficit would be met principally by imported rice, owing to the difficulty of substituting wheat for rice in the diet of large masses of Chinese consumers, it was assumed that the demand for wheat would also be influenced, at any rate to some small degree. Although Chinese statistics for the first six months of the present year again show a reduction in imports compared with the corresponding period a year ago, it should be remembered that the bulk of Chinese imports occur normally in the second half of the year and it is in the February-August period that we expect the anticipated increase will take place. As for Manchukuo the poor crops of all cereals in 1934 gave grounds for expecting a considerable increase in demand for wheat, all the more because of the economic recovery and the rise in the standard of living in that country. There are as yet no direct statistical data for the trade of Manchukuo but the statistics published by the Bureau of Agricultural Economics, of the Department of Agriculture at Washington show that from July to December imports were 15 million bushels, an increase of 4 million on last year.

Egyptian statistics of wheat imports in the first six months of the season did not show the appreciable recovery in demand that had been expected. It would appear, however, that the internal supplies on which the country has so far depended are exceptionally small.

In Japan the very bad rice crop appears to operate in the same direction as in China. Though the excellent wheat crop of 1934 led last October to the expectation of a slight decline, demand in the current season appears larger than last season.

In all it seems that our October forecast of 180 million bushels for the probable import of extra-European countries need not be modified, being sufficiently near present conjectures. In any case, the estimates made elsewhere for probable requirements of extra-European countries, which were initially rather low, have lately been appreciably raised so that they are now fairly close to those of the Institute.

Principal estimates of import requirements in extra-European countries.

WHEAT ADVISORY COMMITTEE.			BROOMHALL (shipments).		
August	estimate.	130	July	estimate.	112
November	"	160	August	"	128
March	"	165	November	"	128
			February	"	136

Summarizing, this examination of the situation in the different consuming countries brings a reduction of 40 million bushels in the import requirements of the European countries, now estimated at 390 million bushels, and leaves unchanged the forecast of requirements in extra-European countries, calculated at 180 millions; world import requirements are thus placed at 570 million bushels against 610 million last October.

In the following table the various estimates of world import requirements are compared.

Principal estimates of world wheat requirements.

WHEAT ADVISORY COMMITTEE.			BROOMHALL (shipments).		
August	estimate.	595	July	estimate.	552
November	"	600	August	"	576
March	"	565	November	"	576
			March	"	552
STANFORD UNIVERSITY.			INTERNATIONAL INSTITUTE OF AGRICULTURE		
September	estimate.	600	October	estimate.	610
January	"	575	March	"	570

IV. — THE POSITION OF WORLD WHEAT SUPPLIES AND REQUIREMENTS.

The statistical situation of wheat this year, revised according to all the information available up to the present shows the following features.

World Production, Trade and Stocks of Wheat
(million bushels).

SEASON	World Production				World exportable supplies			World require- ments (net exports)	World export- able end- of-season stocks
	Total 1)	Exporting countries	Importing countries	U. S. S. R.	Total	Aggregate excluding U. S. S. R.	U. S. S. R.		
1926-27 . . .	3,396	2,397	999	914	1,011	962	49	827	184
1927-28 . . .	3,611	2,534	1,077	797	1,061	1,058	3	809	252
1928-29 . . .	3,925	2,823	1,102	807	1,377	1,377	0	923	454
1929-30 . . .	3,463	2,240	1,223	694	1,062	1,052	10	628	434
1930-31 . . .	3,750	2,688	1,062	989	1,323	1,210	113	824	499
1931-32 . . .	3,704	2,575	1,129	753	1,328	1,264	64	799	529
1932-33 . . .	3,732	2,374	1,358	744	1,258	1,239	19	633	625
1933-34 . . .	3,643	2,203	1,440	1,019	1,144	1,012	32	546	598
1934-35 . . .	3,316	1,966	1,350	...	880	877	3	570	310

(1) Excluding U. S. S. R., China, Turkey, Iran (Persia) and Iraq.

World exportable supplies are estimated at 880 million bushels, the forecast made last October having been reduced by 65 millions.

These supplies are the lowest recorded in the last ten years and are about 264 million bushels, or 23 %, smaller than those of last year, and 500 millions, or 36 %, below the record surplus which existed in 1928-29.

About two thirds, or 600 million bushels, of this quantity consists of wheat carried over from the preceding year. The surplus provided by the poor world crop of 1934 amounted to only 280 million bushels.

The revised estimate of the probable requirements of the importing countries gives a total of 570 million bushels. A reduction of about 40 millions has been made in the October estimate resulting from the smaller probable European demand.

The estimate of the probable imports of the non-European countries remains unchanged at 180 million bushels.

Thus calculated, world import requirements, on the whole, are barely 24 million bushels larger than the extremely reduced demand of last year.

Statistics of the trade movement of wheat during the first six months of this year show that net exports of wheat and wheat flour of all the exporting countries were 264 million bushels while in the corresponding semester of the past season they rose to 282 million bushels. Imports into Europe in the same period were about 182 million bushels against 194 million last season.

The weakness that was foreseen in the international demand for wheat and that is confirmed by the commercial movement in the first half of the season is to be imputed in the first place to the abundant food production in the importing countries but also in large part to the present economic situation, which is characterised by hindrances of all sorts to international movement of goods and currency.

From a comparison between the requirements of importing countries, which are 570 million bushels, and exportable supplies in surplus-producing countries, it would seem that the exportable surplus from the 1934 crop (280 million bushels) covers only about half of the world demand. To meet the deficit it will be necessary to take the difference of 290 millions from the exportable stocks of old crops, which on 1 August 1934 amounted to 598 million bushels. It follows that these stocks will be reduced on 1 August 1935 to 310 million bushels.

This reduction of 290 millions on the total of exportable stocks, which is larger than was foreseen last October, when it was estimated at 256 millions, constitutes without doubt an improvement of fundamental importance in the international wheat market, so many years depressed by the heavy burden of accumulated stocks. If the level of international wheat prices has been influenced only slightly by the change in the statistical situation in the current season, this is due to the persistent impression that world wheat production is potentially not yet balanced by the present effective demand.

V. — NEW CROP OUTLOOK.]

In Europe the area sown with winter wheat is slightly larger. To the figures of the areas sown to winter wheat which were known last month must now be added those of Spain and Algeria. The figures now to hand for these two countries and the slight modifications made in some of the earlier estimates hardly affect the general conclusions outlined in the February issue of the *Crop Report*. By adding together the estimates of the areas sown to winter wheat in the eighteen countries which have reported to the Institute and which together grow about 4/5 of the winter wheat of the northern hemisphere, a total of 174 million acres is obtained, or about 5 million acres more than the corresponding figure of last year.

Some indications are available of the sowings of spring wheat in the three countries where this crop is most important, namely, the U. S. S. R., the United States and Canada. In the other producing areas, spring wheat forms only a small proportion of the total wheat area.

In the U. S. S. R. the area to be sown to spring wheat, according to the plan drawn up by the Government, is almost equal to that stipulated in the plan of last year, namely, 57,360,000 acres against 57,430,000 acres.

The Department of Agriculture in the United States, on the basis of an enquiry made among farmers with the object of determining the area intended to be sown with spring wheat at the beginning of March, estimates, after making allowance indicated by past experience for the influence of weather conditions at the time of sowing and for the losses likely to be shown by the areas sown, that the probable acreage for harvest in 1935 will be 17,847,000 acres.

By way of comparison it is useful to remember that, though the area sown to spring wheat last year was 18,521,000 acres, the area actually harvested, owing to the exceptional damage resulting from the drought, was only 9,290,000 acres. After the enquiry into farmers' intentions had been carried out, it was rumoured that the Government of the United States, in view of the rather unfavourable outlook of the winter wheat crop in some important areas, might abandon its contemplated programme of restriction of spring crops. It is possible, therefore, that the area that will actually be sown to spring wheat in the United States will exceed that on which the above-mentioned estimate was based.

No official forecast of the probable extent of sowings in Canada is yet available. All the available information, however, points to a reduction in spring crops compared with last year.

In most European countries the weather in the second half of February and in the first days of March was marked by rather high temperatures, and, in many instances, by considerable rain. Subsequently there was a brief spell of severe cold which does not appear, however, to have caused appreciable damage to the crops, and which was even, in certain cases, of assistance in retarding too forward development of the plants. The situation in the middle of March was considered to be generally satisfactory.

Weather conditions in the U. S. S. R. were fairly similar to those experienced in Europe. The considerable fall in temperature which occurred in the first days of March produced an ice-crust in several areas where the ground had previously thawed, but it is not possible to indicate the extent to which the crops suffered.

Several areas in the United States benefited from moisture in the form of rain or snow during the second half of February and the first of March. But drought persisted in the middle of the month in a considerable part of the winter wheat producing centres in the West, and during the period considered there were violent dust storms in the area between Western Oklahoma and North-eastern Wyoming.

Information on the condition of the crops in India is favourable at present and suggests that yields will be greater than those of last year.

Turning to North Africa, the crop situation in Egypt improved in February, and at the beginning of March it was normal. The season in Tunisia has been unfavourable owing to the excessive wet, while in Algeria there are complaints of drought. The appearance of crops in French Morocco continued to be fairly satisfactory on the whole.

G. CAPONE.

CEREALS

Austria: After some fine days at the beginning of February, there were considerable falls of snow, especially in the Northern Alps. Night temperatures fell to 20° C below zero (—4, F). Rains were frequent in the last decade of the month.

To judge from the situation at the end of February, the winter cereal sowings are healthy in nearly all parts. Crop condition at the beginning of March was as follows: winter wheat, 2.1 (against 2.0 at 1 February this year and 2.6 at 1 March 1934); winter rye, 2.0 (1.8, 2.7); winter barley, 2.1 (2.0, 2.7).

Area sown to winter cereals, in thousand acres.

(The years indicated are those of the harvest)

COUNTRIES	WHEAT			RYE			BARLEY			OATS		
	1935	% 1935		1935	% 1935		1935	% 1935		1935	% 1935	
		1934 = 100	1929 to 1933 = 100		1934 = 100	1929 to 1933 = 100		1934 = 100	1929 to 1933 = 100		1934 = 100	1929 to 1933 = 100
Germany 1) . .	4,609	93.5	103.9	10,670	97.2	96.3	845	108.3	152.5	—	—	—
Bulgaria . . .	3,010	99.5	101.6	455	101.0	84.9	429	97.9	92.6	—	—	—
Spain	11,063	100.2	99.8	1,401	96.6	92.7	4,536	100.8	98.0	1,619	86.3	84.5
Finland . . .	56	109.8	181.4	628	103.6	118.0	—	—	—	—	—	—
France 2) . .	13,007	101.9	104.3	1,607	96.8	86.3	449	91.0	103.5	2,138	105.7	99.1
Greece	2,020	101.7	137.6	—	—	—	—	—	—	—	—	—
Italy	12,166	101.1	100.7	—	—	—	—	—	—	—	—	—
Latvia	207	99.0	142.3	647	99.0	106.5	—	—	—	—	—	—
Lithuania . .	425	105.5	115.1	1,260	103.6	105.2	—	—	—	—	—	—
Romania . . .	7,858	115.1	113.9	951	107.4	109.1	227	114.0	98.3	—	—	—
Czechoslovakia.	2,212	105.4	111.0	2,428	100.6	96.0	12	104.4	71.4	—	—	—
U. S. S. R. . .	31,836	106.5	127.4	58,519	96.0	90.5	—	—	—	—	—	—
Canada	663	95.0	90.8	631	92.8	87.9	—	—	—	—	—	—
United States .	44,506	105.9	101.1	5,697	113.3	112.9	—	—	—	—	—	—
India 3) . . .	33,811	97.5	106.9	—	—	—	—	—	—	—	—	—
Punjab 3) . .	9,986	92.7	93.4	—	—	—	—	—	—	—	—	—
Syria & Lebanon	1,221	103.9	104.3	—	—	—	652	106.6	80.4	30	93.4	104.4
Algeria	4,016	98.8	104.6	—	—	—	2,965	94.7	86.4	457	101.6	82.5
Egypt	1,439	99.8	90.2	—	—	—	275	96.7	80.4	—	—	—

1) The data refer to areas in cultivation on 1 January of the present year and of last year and on 1 May for the average. — 2) Sowings at 1 January 1935. — 3) Second estimate.

Belgium: February was on the whole mild and wet. The month opened with frost and some snow and closed with storms.

Winter cereals are healthy and vigorous but weeds are in evidence in many places. Sowings of oats have begun.

Bulgaria: Snow fell in considerable quantities during the first half of February and protected the young winter cereal plants from excessive cold. During the second half of the month weather was warmer and wetter.

By the end of the month preparations for spring cereal sowings had begun in the south.

Estonia: Weather was comparatively mild during the first half of February. There was some snow but only a thin cover remained on the ground. Thawing commenced about 18 February and for the rest of the month the temperature remained at 1 to 3° C above zero (34 to 37° F).

Irish Free State: Weather during February was unsettled with rains and high winds. The crops survived the winter satisfactorily and no losses were reported. Condition on 1 March was satisfactory. Preparations for the sowings of winter cereals were carried out in fairly good conditions but sowings had not commenced.

France: Weather was mild and wet during the second half of February except in the South and South-west where it was drier and colder. There were some violent storms and, in many places in the west, fields were waterlogged. Similar conditions prevailed, in the South-west during the first week in March, but the weather again became fine and rather dry in the other areas. Temperature fell considerably during the second week of March and there were frosts and heavy falls of snow in nearly all parts. Partial thawing was reported from some places. No noticeable damage resulted.

The crop condition of cereals on 10 March was less satisfactory than in the preceding month, especially in the West. Wheat in some instances was yellowing in low-lying lands and the roots were appearing. Weeds were prominent in many places. However, though the cold period was too brief for the crops to recover substantially, it did something to prevent excessive growth and the situation of crops in general was still thought to be fairly good.

The bad weather and the cold have up to the present impeded field work and March sowings which help to reduce spring sowings which this year will probably be slight in extent.

Great Britain and Northern Ireland: The weather during the first three weeks of February was mild and wet. Wintry conditions with strong gales prevailed during the remainder of the month over a large part of the country, and snow and sleet fell in the higher districts, while in Scotland there was heavy rainfall and frequent gales.

Reports indicate that autumn sown crops are generally looking well and have not suffered any damage from frosts. Wheat appears to be strong and healthy, but in some places it is still rather forward for the time of year. Barley and oats look well and have continued to make satisfactory progress. Rye is a strong good plant. In Scotland the fresh weather conditions throughout the greater part of the winter were entirely favourable to autumn sown wheat, and up to the end of February when wintry conditions checked growth somewhat, the crop had made excellent progress.

Except in the North of England where very little work was possible during the month conditions during the early part of February were generally favourable for spring cultivation and fair progress was made with all seasonal operations. During the last half of the month farming operations were considerably hindered especially on heavy lands owing to the wet weather, but, as a result of the open winter, work is generally as forward as usual. Except on the lighter soils, spring sowing has not been commenced owing to the heavy rain in the latter part of the month, and drier conditions would be generally beneficial.

Hungary: During the three weeks between 13 February and 6 March the weather was marked by rather high temperatures and considerable rainfall. Towards the end of this period there occurred a sharp fall in temperature and some falls of snow.

Sowings of winter wheat, rye and barley wintered well. They are vigorous and have greened well. Damage resulting from frost, snow pressure and field-mice is insignificant.

At the end of the period under consideration, preparation of the fields for the sowing of spring cereals had begun only in a few places, frosts having impeded this work.

Italy: The weather during the first half of February was rather unfavourable in the islands and in some of the northern areas. The growth of wheat and other cereals was generally good. In some parts of Tuscany and Southern Italy only crop condition was somewhat poor owing to frosts and excessive rain. During this period there were cases of field-mouse and mole-cricket attacks in some provinces of northern and southern Italy. There was some slight insect damage in Sardinia. Weather was fine in the second part of the month and temperatures were mild. These conditions were favourable to crops and the condition of wheat and the other cereals as the end of the month was considered good.

Latvia: There were no extreme frosts at the beginning of February, but afterwards temperature fell and, between the 7 and 11 of the month it was 20° C below zero (-4° F). The month was marked by considerable rainfall. The snow disappeared almost completely during the second half of February.

Portugal: Owing to the dryness, the intense cold, the rather frequent frosts and the high winds, the cereal crops did not have a good appearance in the middle of February and their development was below normal. The rain of the last decade completely changed the situation which was beginning to cause apprehension among growers. In the province of Alentejo, where wheat and oats are most important, it is thought that the cereal year will probably be better than last. The rye crop, stimulated by the plentiful rain, is well developed in the chief producing areas. A reduction is noticeable in the rye area while that of wheat tends to increase.

Romania: Temperature rose quickly during the second half of February and spring conditions prevailed everywhere at the end of the month. Snow had melted everywhere except in the mountainous districts. Plentiful rain fell in all parts and further increased the amount of moisture in the soil which was considered sufficient already.

Preparatory work in the fields had already begun in some parts of the Banat.

The technical agents of the Ministry of Agriculture and of the provinces have begun an active propaganda campaign of agricultural technique among the peasants.

After some fine days at the end of February temperature again fell, and there was snow nearly everywhere. Winter cereal sowings did not, however, suffer from the bad weather, but growth was delayed. Spring work was also impeded in the middle of March by the snow or by the excessive moisture.

Yugoslavia: Variable but rather warm, sunny and dry weather in February followed the extreme cold of January.

The snow on the fields began to melt towards the end of the month.

Crop condition of winter sown cereals at the beginning of March was judged very good.

U. S. S. R.: The weather during the second and third decade of February was exceptionally mild in nearly all parts of the Union, and the sowing of spring cereals had begun in many of the southern regions. Up to 2 March, according to the provisional estimates, more than 250,000 acres had been sown in Uzbekistan, about the same area in the Azov-Black Sea region and about 75,000 acres in the Odessa region.

Temperature fell sharply nearly everywhere in the middle of the first decade of March and touched 15° C below zero (5° F). 4° F below zero were recorded in Northern Ukraina and 14° F in the south. After thawing, the ground was again frozen and an ice crust was formed in several areas. The drop in temperature was accompanied in many areas by falls of snow, after which the snow line at the end of the first decade of March encroached to the south.

Argentina: Weather in February was generally favourable to the preparation of the soil for the coming cereal sowings. The Ministry of Agriculture has been working hard for some time to eliminate some inferior varieties of wheat.

United States (Telegram of 28 February): Rainfall was general in a great part of the South-east, and there was more or less precipitation recorded, principally in the form of snow, in some parts of the Western dry belt, but severe dust storms were experienced from Western Oklahoma to South eastern Wyoming. The Western Mountains are holding more snow this year than last. Weather in the winter wheat States was mild until the end of the week when a cold wave became general. Crop condition in the Ohio Valley was fair to good and the moisture situation was better in Missouri and Iowa.

The sowing of oats had commenced in some parts of the South-east and South-west.

(Telegram of 7 March): Moderate to heavy precipitation was recorded in some parts where the shortage of rain had become critical. In South Dakota rainfall was nearly general and effected an improvement, while snow was helpful in Montana. Good rains were also received in Minnesota, North Dakota and were widespread in the Rocky Mountains and westward. The area from Western Nebraska and South-eastern Wyoming to Mexico is still critically dry.

The crop condition of winter wheat was satisfactory except in the Western section. The sowing of spring oats had commenced in the Southern section.

(Telegram of 14 March): Heavy rainfall was general in the East Central Section, the Ohio Valley and southward to the Central Gulf States. Sowings of oats were delayed but soil moisture had become satisfactory in the Eastern Ohio Valley where the condition of winter wheat was fair to good. Winter cereals were greening and slight damage was reported from the prolonged ice-cover in Iowa. Crop condition was satisfactory in the Lower Missouri and Mississippi Valleys and had improved in the South-west except in the Western Section of Texas and of Kansas, where condition was very poor. Moisture conditions improved in Nebraska, South Dakota, Montana, Western Oklahoma and Eastern Oregon. Conditions were still critically dry in Eastern Colorado, New Mexico and Eastern Wyoming where wind erosion has been serious.

(Telegram of 21 March): Temperature was normal everywhere except in the Great Plains where it was much above normal. Rainfall was general in the coastal regions, but elsewhere it was light with continued dryness in the South-west. Work on the land was hindered in the Mississippi Valley and eastwards owing to the damp conditions. Weather in the western states was dry with dust storms.

The grain crops in the Western Great Plains and the South-west are suffering from drought but elsewhere progress and condition were fair to good.

The indicated acreage of cereal crops for harvest in 1935 is set out below. The figures are based on the reported planting intentions of farmers as at 1 March, allowance being made based on past experience for the influence of difficulties at planting time and for the loss of planted acreage from various causes. The figures are not to be taken as estimates of the area that will actually be harvested in 1935 but only as an indication of the acreage for harvest judging by plans now reported by growers which are themselves subject to change. The area actually harvested in 1935 may turn out to be larger or smaller by reason of weather conditions, price changes, labour supply, financial conditions, developments in the Department of Agriculture's programme for crop acreage adjustment and the effect of the intentions report itself upon farmers' actions.

For purposes of comparison the area planted and the area finally harvested are also given for 1934 when the acreage abandoned was abnormally large.

*Intended plantings in 1935, allowance being made for average abandonment,
with acreages planted and harvested in 1934.*

	Durum	Other Spring Wheat	Total Spring Wheat	Barley	Oats
Intended plantings 1935 (000 acres)	2,042	15,805	17,847	11,954	39,108
Area planted 1934 . . . (000 acres)	2,046	16,475	18,521	11,378	37,976
Area harvested 1934 . . (000 acres)	990	8,300	9,290	7,144	30,395
% of area planted in 1934	99.8	95.9	96.4	105.1	103.0
% of area harvested in 1934 . . .	206.3	190.4	192.1	167.3	128.7

Japan: Weather was favourable to wheat and barley.

Algeria: February was a dry month. Cereals in the Oran province suffered again from drought in the middle of March. The crop prospects, however, are not really threatened except on the heavy soils of the low lying districts of this area.

Cyrenaica: Weather was very favourable in January, but there was less rainfall in February and this may affect adversely the production of barley and wheat. The crops, however, owing to the favourable weather conditions, made good progress. Field work proceeded regularly.

Egypt: The growth of the wheat crop improved, especially in the cultivations attacked by chlorosis last month. This was due to the improvement of the weather conditions and the supply of water after the winter closure of canals. The formation of ears is general in the early cultivations and some of the general ones. Seed formation has started in some cultivations in Upper Egypt. The crop is normal.

The growth of the barley crop improved during this month owing to the improvement of the weather conditions and the supply of water after the drought period. The early cultivations in Upper Egypt are in the stage of seed-formation; some of them are maturing, while in the rest ear-formation is general. The crop is on the whole normal.

French Morocco: A considerable fall in temperature occurred at the beginning of February causing falls of snow and hail. The quantity of precipitation during the

month was normal. Cereals at the end of the month showed irregular development, but they were fairly good in appearance. There is, however, some danger of the growth of weeds in some areas. Tillering had begun in the south and east and was normal.

The total acreage of sowings seems to be fairly close to that of last year but is slightly greater. There is a slight increase of 4 % in barley and a more definite increase of 8 % in hard wheat, but the sowings of soft wheat are down by 6 % with substantial declines in some districts and increases in others. The wheat area, on the whole, is greater by about 5 %.

Tunisia: January was an unfavourable month for crops which suffered owing to excessive moisture and cold. At the end of the month their appearance was mediocre in the northern and central districts (the Bizerta, Tunis and Kef districts) but it was still good in the South (the Susa and Gabes districts).

February was characterised by higher temperatures and normal rainfall in the first half and by sudden changes in temperature due to high winds in the second half. These conditions, however, were relatively favourable and affected an appreciable improvement in the condition of crops.

In the north (the Bizerta district) the soil became dry again and growth was stimulated during the second half of the month. *Florence-Aurore* wheat, of which the greater part of the soft wheat sowings consist, suffered from excessive wet and tillering was limited and sometimes impeded, but there are no grounds for fearing a substantial decline in the yield. Hard wheat is vigorous and tillering well and condition, on the whole, improved. In the Centre (the Thunis and Kef districts), growth was good and the damage caused by excessive humidity is, on the whole, slight. In the South (the Susa and Gabes districts) wheat is good in general and barley which suffered only slightly from frost is also good and, in some places was beginning to form ears at the end of February. The quantity of rain which was received during the winter gives reason to hope for a good crop in this area, the volume of which will have an important effect on the total Tunisian barley production.

The area of sowings is smaller in the North, but it is considerable in the South. The indications are, therefore, that the wheat area is smaller, especially that of soft wheat, and that the barley area is greater.

Union of South Africa: The wheat crop in the Cape Province appears to have been generally disappointing. Rust, late frost and fungi caused more damage than was previously anticipated and greatly reduced the quality of the grain. Many farmers in the Orange Free State were still busy harvesting and threshing in January and excellent yields were being obtained.

MAIZE

Argentina: Crop condition of maize at the end of February varied from good to excellent. Slight grasshopper and drought damage was reported from some places.

United States: According to a report published by the Department of Agriculture on farmers' intentions to plant, the indicated maize area this spring, after allowance

is made for normal abandonment, is 95,692,000 acres. This acreage is 0.4 % greater than the area actually sown in 1934 and 9.4 % greater than that harvested.

Sowings have commenced in the extreme South.

French West Africa: The outlook for the harvest in French Guinea was good.

Union of South Africa: January was exceptionally hot and dry practically throughout the Union. Toward the end of the month, however, beneficial rains fell in some of the eastern districts of the Cape Province, in the Transkei and also on the Natal highveld. The heavy and continuous rains in November and December considerably hampered ploughing, planting and proper cultivation. The severe drought in January and top grub caused much damage to early-planted crops but, with the general and soaking rains throughout the maize belt early in February, crop prospects improved considerably.

Maize.

COUNTRIES	AREA					PRODUCTION									
	1934	1933	Aver. 1928	% 1934		1934	1933	Average 1928	1934	1933	Average 1928	% 1934			
	—	—	to 1932	and 1934/35		—	—	to 1932	—	—	to 1932	and 1934/35			
	1934/1935	1933/1934	1928/1929 to 1932/1933	1933/1934		Average	1934/35	1933/34	1928/29 to 1932/33	1934/35	1933/34	1928/29 to 1932/33		1933/1934	Average
	1,000 acres					1,000 centals			1,000 bushels of 56 lb.						
				= 100								= 100	= 100		
Austria . .	160	159	148	101.0	108.1	3,303	3,011	2,667	5,897	5,377	4,763	109.7	123.8		
Bulgaria . .	1,658	1,796	1,757	92.3	94.3	18,067	20,967	17,660	32,262	37,441	31,536	86.2	102.3		
France . .	823	832	843	98.8	97.5	11,452	9,589	10,516	20,449	17,123	18,778	119.4	108.9		
Greece . .	586	645	555	90.8	105.6	5,291	6,026	3,755	9,448	10,760	6,706	87.8	140.9		
Hungary . .	2,807	2,816	2,726	99.7	103.0	46,334	39,889	37,085	82,740	71,230	66,223	116.2	124.9		
Italy . . ^(s)	3,271	3,190	3,391	102.5	96.5	64,330	52,549	50,695	114,874	93,837	90,528	122.4	126.9		
Italy . . ^(t)	384	346	252	111.1	152.3	6,059	4,564	2,733	10,820	8,151	4,880	132.7	221.7		
*Poland . .	225	225	231	99.9	97.2	—	—	1,232	2,090	2,200	3,732	—	—		
Romania . .	12,368	11,928	11,470	103.7	107.8	106,840	100,408	113,401	190,786	179,301	202,502	106.4	94.2		
Switzerland .	2	2	3	81.3	74.0	55	63	71	99	113	126	87.2	78.4		
Czechoslov. .	359	316	351	113.4	102.3	a) 5,447	3,370	5,466	a) 9,728	6,018	9,760	161.6	99.7		
Yugoslavia .	6,578	6,272	5,761	104.9	114.2	113,631	78,883	76,843	202,912	140,863	137,220	144.0	147.9		
Total Europe	28,996	28,302	27,257	102.5	105.4	380,809	319,319	320,892	680,015	570,214	573,022	119.3	118.7		
Canada . .	161	137	143	117.9	112.8	3,807	2,830	2,997	6,798	5,054	5,351	134.5	127.0		
United States	87,486	103,260	102,768	84.7	85.1	773,202	1,316,928	1,434,802	1,380,718	2,351,658	2,562,147	58.7	53.9		
Cambodia . .	741	297	92	250.0	802.4	9,921	3,748	1,079	17,716	6,693	1,927	264.7	919.2		
Syria & Leb. .	61	67	76	90.9	80.0	646	573	837	1,154	1,024	1,494	112.7	77.2		
Turkey . .	778	942	884	82.6	88.0	7,108	12,502	10,707	12,692	22,324	19,121	56.9	66.4		
Algeria . .	25	25	23	100.7	107.9	165	127	146	295	228	260	129.7	113.4		
Egypt . .	1,632	1,638	2,036	99.6	80.1	34,653	32,536	41,658	61,880	58,101	74,389	106.5	83.2		
Eritrea . .	11	27	21	40.9	52.3	79	220	177	142	394	317	36.0	44.7		
Kenya . . ^(s)	123	113	193	109.0	63.8	1,941	1,494	2,604	3,467	2,667	4,650	130.0	74.6		
French Morocco . .	986	887	714	111.0	138.1	5,425	3,096	3,171	9,688	5,528	5,663	175.3	171.1		
Tunisia . . ^(t)	44	37	44	120.0	101.7	132	132	130	236	236	232	100.0	101.7		
*Argentina . .	17,372	16,097	13,714	107.9	126.7	...	130,095	170,217	...	232,314	303,960	...	...
*Un. of S. Afr.	...	3) 6,506	3) 5,847	...	...	39,160	47,802	6) 33,784	69,929	85,361	6) 60,328	81.9	115.9
TOTALS . . .	121,044	135,732	134,251	89.2	90.2	1,217,888	1,693,505	1,819,200	2,174,801	3,024,121	3,248,573	71.9	66.9		

* Countries not included in the totals. — s) Spring crop (*maggenço*). — t) Summer crop (*cinquantino*). — 1) Of which 218,000 acres unmixed crop and 141,000 acres mixed crop. — 2) Of which 3,538,000 centals (6,319,000 bushels) from unmixed crop and 1,909,000 centals (3,409,000 bushels) from mixed crop. — 3) European crop. — 4) Maize and sorghum. — 5) Area sown. — 6) Figures for the average not yet revised according to the 1933-34 census results.

RICE PRODUCTION IN MONSOON ASIA AND THE EASTERN TRADE IN RICE *)

Given the preponderant part of the world's rice crop that is produced in monsoon Asia and the fact that by far the greater proportion of the trade in the commodity passes between these countries, the estimates now available enable the general outlines of the world rice situation for 1934-35 to be summarized. The available statistical data show that, excluding China, for which official estimates have been available only in the last two years, production this season has fallen to a very low level, much below anything experienced during the last decennium. Even when China, which in 1933-34 is officially stated to have produced 115,000 million pounds of rough rice, is taken into consideration it is probable, given the reports of crop condition that have so far been published, that this statement will hold good.

World production of rough rice (1).

(million pounds).

1934-35 (very approximate)	176,000
1933-34	199,000
1932-33	196,000
1931-32	195,500
1930-31	201,000
1925-26/1929-30 (average)	187,800

(1) Not including that of China, the U. S. S. R., Iran (Persia) and certain other countries of smaller production for which statistics are very incomplete or are entirely lacking.

Of the three major exporting countries that must place a large part of their surplus in non-preferential markets, Burma has had a small crop and Siam a crop rather larger than last season while French Indo-China does not appear likely, as far as available indications go, to have a crop above average. Total supplies in Chosen and Taiwan, where production has been encouraged by the Japanese Government to a point at which they are normally more than capable of meeting the deficiency in the metropolitan market, are likely to be smaller this season. In China and India, which, though the world's largest producers, have large deficits, production appears to have been smaller than last year in the former while India has had its smallest crop since 1927-28. Japan, which is surpassed only by China and India in the volume of its production, has had an exceptionally small crop this season while reports from the remaining deficit countries, British Malaya, Ceylon, the Netherlands East Indies and the Philippines, in every case lead to expectations of small production.

(*) Unless otherwise stated, all data have been converted to terms of milled rice and derivatives, the latter including broken rice, white meal, flour and polish but not bran.

THE SITUATION IN BURMA, FRENCH INDO-CHINA AND SIAM.

The price of Big Mills specials at Rangoon had fallen fairly continuously from the latter part of November 1933 to the end of March 1934 but in May and June, when sowings were being made, it was rapidly regaining its previous maximum. This did not, however, prevent a decline of 252,600 acres, or 2.0 % on the previous year and 0.8 % on the average, in the area sown in Burma in 1934. Though the monsoon was on the whole fairly strong the late rains were poor and there was considerable damage by insects. The final estimate of area destroyed was, however, 95,400 acres less than in 1933-34 so that the area to mature was only 157,200 acres less than in that season. In Lower Burma, from which the major portion of the export surplus is derived, there were decreases of 17,400 acres in area sown, 5,400 acres in area destroyed and consequently 12,000 in area matured. Production is estimated at 11,282 million pounds of rice and rice products, a decrease of 12.6 % on that of the previous year and of 6.1 % on the average. The fall in production was most marked in Insein, Bassein, Hanthawaddy and Pyapon. It should be noted, however, that the area sown in Burma in 1933-34 was the largest since 1930-31, while the production was a record, thanks to particularly favourable weather.

Production and net export of major exporting countries.

(million pounds rice and derivatives).

Year	Production			Year	Net export			
	Burma	French Indo-China	Siam		Burma to foreign countries	Burma to Indian ports	French Indo-China	Siam (2)
1934-35 . . .	11,282	...	8,572	1935 . . .	...	...	...	...
1933-34 . . .	12,905	9,376	8,280	1934 . . .	2,947	5,752	3,253	4,123
1932-33 . . .	12,228	9,305	8,460	1933 . . .	4,072	3,669	2,698	3,568
1931-32 . . .	10,458	9,034	6,727	1932 . . .	4,688	2,341	2,624	3,379
1930-31 . . .	12,800	9,624	7,980	1931 . . .	4,803	3,530	2,101	2,683
1929-30 . . .	12,410	9,557	6,407	1930 . . .	5,763	2,239	2,465	2,315
1928-29 . . .	12,181	9,314	6,419	1929 . . .	4,366	2,521	3,229	2,625
1927-28 . . .	12,161	10,333	7,547	1928 . . .	3,754	3,174	3,904	3,500
1926-27 . . .	12,723	9,561	8,641	1927 . . .	4,870	2,682	3,630	3,708
1925-26 . . .	11,805	9,440	6,933	1926 . . .	5,134	1,619	3,506	2,780

(1) The official data are for rice both in the husk and not in the husk but, as practically all the rice exported is milled, they have been taken to represent milled rice and derivatives. — (2) Exports from Bangkok, which make up 98 % of the value of the total rice exports from Siam. Data refer to the season from 1 December to 30 November.

The export surplus of French Indo-China is derived in the main from Cochin-China. While preparation of the land and sowings were carried out under generally fairly good conditions, transplanting was hindered by drought. The crop was somewhat affected by drought in the east. In the central provinces in particular there was damage by floods of the Mekong and Dongnai, while in the west

both flood and drought damage occurred. Save in a few districts, however, these irregular moisture conditions, together with low temperatures, disease and insects, appear, according to the most recent reports available, to have caused a delay in the crop rather than permanent damage, as appearance was said to be generally good when harvesting of the main crop began in December. Arrivals of new crop in the first half of January were still below normal for that period. In Cambodia, from which part of the export is derived, the long drought in the earlier part of the season hindered the crop, especially in the higher padis, and increased insect damage, while the exceptionally rapid rise of the Mekong and Tonle-Sap later caused losses. On the whole, however, conditions in the latter part of the season, apart from an interruption of the rains and a fall in temperature in mid-October appear to have been better, losses were smaller than expected and yields higher. In Tonkin and Annam crops have been affected seriously by drought, typhoon and flood.

Production in French Indo-China.

(million pounds rice and rice derivatives).

Year	Cochin-China	Cambodia	Tonkin	Annam	Lao
1934-35 . . . . .	...	...	2,409	...	...
1933-34	3,617	737	2,839	1,600	583
1932-33	3,108	1,225	2,890	1,519	563
1931-32	3,636	781	2,903	1,183	531
1930-31	2,985	1,446	3,220	1,442	531
1929-30	3,484	1,047	2,990	1,505	531
1928-29	3,405	976	2,913	1,473	547
1927-28	3,876	1,273	3,013	1,543	628
1926-27	3,405	1,448	2,211	1,918	579
1925-26	3,240	1,179	2,923	1,535	563

Production in Siam, despite poor rainfall in the earlier part of the season in the important central areas, remained, according to the first forecast, higher than that of last year and much above the average.

THE COUNTRIES OF DEFICIT.

Production in India proper (that is, excluding Burma) has fallen for the third year in succession and the estimated crop of 62,962 million pounds is the smallest since 1927-28. The area sown was 2.6 % smaller than in the previous season, decreases having occurred in all the provinces save Bihar and Orissa and the United Provinces ; production rose, however, not only in these two provinces but also in the Central Provinces and Assam. The smallness of the crop was due principally to the fact that the monsoon was rather weak, particularly in August and the early part of September. In Bengal, the principal producing province, the decline in the production of the winter crop, which forms the bulk of the production, was 10.9 % from the five-year average though the corresponding decline in area was only 3.4 %.

Bihar and Orissa, on the other hand, though still 13.6 % below average, had a crop 9.2 % above that of 1933-34, thanks to an increase of 3.8 % in area and to favourable weather in almost all districts. Though the area under rice in Bihar and Orissa is much larger than that in Madras, production has in the last three years been smaller than in the latter province. The crop in Madras underwent a considerable decrease for the second year in succession, drought having been seriously felt in the Deccan. India has thus again a very large deficit to be filled by imports.

Production and net export to foreign countries of India (excluding Burma).

(million pounds rice and derivatives).

Year	Production				Year	Net export to foreign countries All-India excluding Burma (2)
	All-India excluding Burma (1)	Bengal	Bihar and Orissa	Madras		
1934-35	62,962	20,501	11,670	11,962	1935	
1933-34	63,910	21,604	10,687	13,226	1934 . . (3) —	167
1932-33	64,933	23,299	10,456	13,455	1933	387
1931-32	71,678	23,627	14,281	13,403	1932	512
1930-31	67,337	22,913	13,975	13,380	1931	479
1929-30	65,074	20,414	14,961	13,079	1930	626
1928-29	67,825	24,103	13,908	12,935	1929	601
1927-28	58,111	16,160	10,896	12,651	1928	272
1926-27	61,147	18,306	11,917	11,802	1927	581
1925-26	64,696	20,454	12,168	13,246	1926	629

(1) The all-India statistics exclude the production of the Punjab, the North-West Frontier Province, Ajmer-Marwara, Manpur Pargana and certain other Indian States, which together produced 2,536 million pounds on the average of the five years ending 1932-33; they also exclude the production of the feudatory states of Bihar and Orissa, for which no reliable data are available. In 1933-34 the production of Bhopal was included for the first time. — (2) *Tel quel*; only a relatively small part consists of rough rice. — (3) Net import.

The crop harvested in China in October is variously reported to have been from one-fifth to one-quarter smaller in some of the most important areas. The failure of the rains in July and August in the Lower Yangtze, the largest and most accessible area of production, is responsible for this. Parts of the other great producing area, in Kwangtung and Fukien, also suffered from drought. Though the carryover of old rice is considerable and secondary food crops are reported to have been good and the winter wheat crop in the Yangtze valley, which is in the transitional zone between the wheat-eating and rice-eating parts of China, is also said to be larger than last year, there will, if the proportion of damage turn out to be really so high, be a large demand for foreign imports of rice into both the Shanghai and Swatow areas. The credit arrangements of rice importers have continued, however, to be dislocated by the large exports of silver consequent on the difference between the exchange rate of the Shanghai dollar and the price of silver,

a difference accentuated by the heavy demand from the United States that followed the Silver Purchase Bill of 19 June 1934. The Chinese Government on 15 October placed a duty on the export of silver plus an equalization charge aimed at making such export unprofitable but high rates of interest in Shanghai continued to hinder the financing of rice imports.

*Net imports into the principal Asiatic countries of deficit
other than India proper and Japan.*

(million pounds rice and derivatives).

Year	China	British Malaya	Ceylon	Netherlands East Indies
1934	1,685	1,025	1,088	573
1933	2,843	982	1,003	752
1932	2,992	921	1,024	890
1931	1,427	1,156	1,006	1,304
1930	2,647	1,329	1,064	1,357
1929	1,439	1,256	1,102	1,592
1928	1,683	1,177	1,093	1,258
1927	2,799	1,228	1,053	1,003
1926	2,489	1,068	1,033	1,293
1925	1,679	907	972	1,110

In British Malaya, where the diminution of dependence on foreign supplies is also being encouraged, the continued extension of the rice area by irrigation and drainage works and the increased use of improved seed appear to have been counterbalanced this season by extensive flood damage in several important producing areas. As consumption is likely to continue to expand, with the improvement in the rubber market, a further increase in import requirements is likely in 1935.

Ceylon also suffered from a prolonged drought in 1934 and the rice crop harvested in February-March of this year was expected to be a very poor one and in a few cases even a total failure. A large increase in imports, particularly from Siam, was already noticeable in December in comparison with the same month in 1933 and further heavy imports may be expected before the second crop comes on the market in July 1935.

With the strict regulation of imports and of the trade between their surplus and deficit districts in the last two years and the rapid extension of area the Netherlands East Indies have become a market of more restricted capacity. The area harvested from January to December 1934, together with that remaining to be harvested at the end of December, was rather smaller than the corresponding figure of 1933 and 8 % larger than on the average of 1924-33 but in all three sections of Java—East, Middle and West—unit-yields were lower than in any of the previous five years. Production is insufficient for probable requirements and the Government licensed imports from abroad, which began in November. In the Outer Provinces production prospects were at the end of December on the whole normal.

For the Philippines reports have in the past few months been somewhat contradictory regarding the crop just harvested. While the weather early in the season was favourable, damage by the subsequent typhoon and by insects was suspected to be considerable, while yields in some of the newer areas were likely to be in any case low. When the probable effects of better conditions in the copra market in raising food consumption are also taken into account, the Philippines appear unlikely as yet to suffer from the overproduction that has recently been feared but on the contrary to require at least as much as in recent years to supplement their rice supplies with imports from foreign countries.

THE JAPANESE RICE TRADE.

Japan has had a very poor crop, with the exceptionally low figure of 16,327 million pounds rice and derivatives, the smallest crop since 1913-14. This is due to the unfavourable weather, the area sown having been practically the same as last year, while production has fallen 27 %. A severe typhoon struck the western part of Hondo in September while drought in Kiushiu and Shikoku and excessive rainfall and insects in other sections caused much damage.

Sources of supply of Japan.

(million pounds rice and derivatives).

Year	Production			Year	Net import of Japan		
	Japan	Chosen	Taiwan		From foreign countries	From Chosen	From Taiwan
1934-35	16,327	...	2,863	1935 . . . . .	...	...	...
1933-34	22,901	5,881	2,634	1934	(1) — 22	2,861	...
1932-33	19,521	5,284	2,822	1933	279	2,295	...
1931-32	17,848	5,131	2,356	1932	235	2,181	952
1930-31	21,617	6,200	2,321	1931	(1) — 137	2,659	765
1929-30	19,252	4,429	2,041	1930	273	1,470	531
1928-29	19,493	4,368	2,140	1929	395	1,632	568
1927-28	20,074	5,592	2,173	1928	496	2,050	609
1926-27	17,970	4,946	1,957	1927	1,278	1,643	685
1925-26	19,299	4,775	2,029	1926	748	1,661	621

(1) Net export.

In Chosen there was a decrease of 5.3 % in area from the rather high figure of 1933-34 and, though temperatures and rainfall in June and July favoured transplanting, there was subsequently considerable damage by drought and floods in the south of the peninsula. In Taiwan, on the other hand, a new record of production has been attained, despite drought damage to the second crop in the northern sections. Given the very small crop in Japan and the likelihood of a smaller crop in Chosen, the heavy carryover of old crop rice on 1 November 1934, of which about three-quarters were in the hands of the Japanese Government,

will be largely absorbed in the current season ; the amount of the decrease in production is, in fact, greater than the total carryover of old crop, which was about one-fifth of the normal annual consumption of Japan.

THE GENERAL SITUATION IN THE COMPETITIVE MARKETS

Burma's export surplus is estimated at 7,175 million pounds of rice and derivatives, a decrease of 1,524 million on the 8,699 million pounds actually exported from last season's crop. Such a decrease corresponds to the decrease in the production. Crop movement in the first two months of the year was even more rapid than in the corresponding period of last year. Exports to India were about one-third larger than in the corresponding period of 1934 while increases in exports were also registered to China, the Netherlands East Indies and the Straits and, to a less extent, to Ceylon. Given the still smaller crop in India, an even larger proportion of the total exports of Burma is likely to be absorbed in that market than in 1934, when the proportion was 66 %. This year the natural advantage of proximity will be reinforced not only by the currency advantage (as against French Indo-China) but by the proposed import duty of 12 annas per maund (1s 6d per cwt.) to be imposed up to 31 March 1936 on all imports of foreign brokens, a measure introduced in response to the large imports of cheap low-quality foreign rice, especially from Siam, aided by reduced freight rates, but also from French Indo-China, in the past year. It may be expected therefore, that there will this year be still less Burma rice available for foreign markets than in 1934.

In the absence of later estimates and, in the case of the exporting countries of French Indo-China, of any estimates at all, it must be assumed, on the basis of crop condition reports and on such statistical data as is available, that production in French Indo-China and Siam is average. For French Indo-China the export surplus will in all probability be below the high figure of 3,253 million pounds actually exported in 1934. The metropolitan market, which consumes the rice almost entirely for stock-feeding and to a much less extent, for industrial purposes, takes not far below half of the total export and has steadily increased its absorption in the last five years. Import quotas for foreign rice and an increase in import duties favoured Indo-China in 1934. On the other hand the large quantities of wheat available for feeding limit the possibilities of absorbing larger proportions of rice and in the early part of this year seriously reduced the imports. In the other markets, Saigon rice is consumed as food, largely in mixtures with rice of other origins. The most important foreign market is China, which in 1934 was followed by India, the Straits and Cuba; to all of these unless China there was an increase. The export to India, which was exceptionally high last year, is likely to be checked by the proposed new duty. On the other hand the large requirements of Eastern countries, together with the large quantities of feeding wheat on the French market and the bounty of 15 francs a quintal now given by the French Government to exports of Indo-Chinese rice to other markets than France may result in a very considerable diversion of Saigon rice to China and other Eastern markets.

In Siam the first estimate of surplus available for export is 4,194 million pounds, slightly less than the actual exports of 1934. In the first three months of the export season, up to the end of February, exports showed an increase of 40 %, rises being particularly notable to the Straits, China and the Netherlands East Indies. There has been a steady increase in the last few years in the exports to the Straits, in which the preference of the Chinese population for Siam " field " types is a strong point in Siam's favour. With the continued large requirements of India for Burma rice, by far the chief rival of Siam in the Straits, Siam's position in the latter market is likely to be as strong as ever in 1935. The reopening of the Netherlands East Indies to foreign imports, which had begun to make itself felt in the last quarter of 1934, and, still more, the shortage in Ceylon, are likely to more than compensate for the effects of the probable import duty in India. Last year the share of Siam in Ceylon's imports almost trebled and rose from 9 % to 22 %, partly because of the relatively great reduction in the prices of Siam rice and partly because of the small production in India, which decreased available supplies from both Burma and that country. Siam rice has in the last three years made great progress in Cuba but this remains a secondary market. Even on the supposition that Japan again takes Siam rice this year, following on the smaller production in Japanese territories, the bulk of Siamese exports will, however, be directed to the Chinese market.

Imports into China.

(million pounds rice and derivatives).

	1934	1933	1932	1931	1930	1929
French Indo-China	755	1,249	1,010	118	438	169
Siam	761	1,007	858	94	60	83
Burma and India	141	560	956	183	1,268	96
Hong-kong	29	25	153	915	803	1,065
Gross total	1,700	2,856	2,998	1,431	2,651	1,443

In the official statistics the imports are *tel quel* but as the great bulk is white rice they may be taken as roughly equivalent to rice and derivatives.

In the last four years Siam has gained on French Indo-China in the Chinese market, Burma taking a large share only in years when the capacity of India to absorb outside supplies is small and prices are low. China's demand is mainly for Saigon and Siam broken, while as regards whole rice the cheaper grades of Siam Garden have recently been gaining on Saigon No 1 Long. This year the poor crop in China, the situation in the French market and the large requirements of other markets should together result in an easy absorption of the surplus, together with a regaining of lost ground by French Indo-China. Movement from both sources was rapid in the first months of the year, and about equally divided. The total import of China in January was almost four times as great as in the same month last year.

In Europe, which takes Oriental rices mainly for industrial and feed purposes, Germany, the Netherlands and the United Kingdom are the principal markets apart from France, which takes very little save that produced in its own possessions. Competition of Oriental rices in the other three large markets is principally between Burma and Siam. Germany's imports of milled rice were reduced by about one-half in 1934, the Government wishing to encourage milling within the country and protect home-grown feeds. The import of rice bran was practically stopped by a heavy surcharge. Although there was an increase in the import of rough rice, of which about four-fifths is drawn from Burma, most of the difference was absorbed by Italian rice for human consumption, the German Government having made an agreement with the Ente Nazionale Risi to take a greatly increased import from Italy.

The Netherlands, which import rough rice mainly from Burma and Japan and very little milled rice from the East, increased their imports of the former in 1934.

Total imports of whole rice into the United Kingdom were higher in 1934 than in the previous year, though below the 1932 level. Imports from Burma increased, thanks to the preferential duty. For brokens and mixtures of whole and broken rice, on the other hand, French Indo-China and other foreign countries showed a great gain, while Burma fell, the total import being only a little higher. The large supplies of feeding wheat in the French market may result in still larger amounts of brokens from French Indo-China coming on the United Kingdom market.

THE GENERAL OUTLOOK.

World production in 1934-35 has been very small. The decline has been principally in the countries that have normally the largest deficits, India, Japan and very possibly China. The importing countries of the second order – British Malaya, Ceylon and the Netherlands East Indies – also appear to have had small crops.

On the other hand the principal exporting countries, except for Taiwan, have had crops not above average and in the case of Burma and probably Chosen well below average. In the first months of the commercial season demand has been very active and exports from Burma, French Indo-China and Siam have been large.

Burma will, as last year, profit by the shortage in India. Japan will at any rate be able to absorb a large part of its heavy carryover. While rising prices may to some extent act as a check on consumption, demand is likely to be active and general in the other importing countries during the coming months and not only the surplus of Burma after India's demands have been satisfied but the surpluses of Siam and French Indo-China should be marketed without difficulty. Prices are likely to maintain an upward tendency.

C. J. ROBERTSON.

RICE

United States: The report of the Department of Agriculture on farmers' sowing intentions as at 1 March indicates that the rice area this year, allowance being made for average abandonment due to various causes, will be about 816,000 acres which is 4.5 % greater than the acreage harvested in 1934.

India: Threshing of winter padi continued in February. Condition of the standing crop in Madras was fair save in a number of districts where it had been affected by the lack of rain.

In Bengal light to moderate rain facilitated preparation of the land.

British Malaya: With the exception of the eastern coastal areas, where precipitation was in excess of the average, weather was normal in January throughout the Peninsula.

Harvesting was completed in parts of Negri Sembilan, Pahang, Johore and the greater part of Selangor and good progress was made in other districts of Kedah, Province Wellesley, Negri Sembilan, the early-planted inland areas of Malacca, and in parts of Pahang, Johore and Perak.

Rice.

COUNTRIES	AREA					PRODUCTION OF ROUGH RICE											
	1934/35	1933/34	Average 1928/29 to 1932/33	% 1934/35		1934/35	1933/34	Average 1928/29 to 1932/33	1934/35	1933/34	Average 1928/29 to 1932/33	% 1934/35					
				1933/ 1934	Average 1934 age							1933/ 1934	Average 1934 age				
														= 100	= 100	= 100	= 100
1,000 acres					1,000 centals			1,000 bushels of 45 lb.									
Bulgaria . .	15	17	18	86.0	79.0	298	291	338	662	646	750	102.5	88.3				
Italy . . .	323	316	337	102.1	95.8	13,602	13,398	14,437	30,226	29,772	32,081	101.5	94.2				
United States	781	792	924	98.6	84.5	17,233	16,676	19,358	38,296	37,058	43,017	103.3	89.0				
*Chosen . .	3,938	4,160	3,985	94.7	98.8	...	74,440	62,683	...	165,418	139,293	...	...		
Taiwan 3) (1)	713	708	652	100.7	109.4	17,985	15,703	13,861	39,965	34,895	30,802	114.5	129.7				
(2)	935	961	863	97.4	108.3	18,251	17,634	15,703	40,557	39,186	34,894	103.5	116.2				
India																	
proper 3)	68,360	70,183	69,843	97.3	97.9	850,832	863,647	911,017	1,890,701	1,919,177	2,024,441	98.5	93.4				
Burma 3)	12,666	12,919	12,762	98.0	99.2	152,462	174,391	162,370	338,797	387,528	360,815	87.4	93.9				
Indo-China:																	
Annam 4)	945	948	1,021	99.7	92.5	7,540	8,598	7,435	16,755	19,106	16,522	87.7	101.4				
Tonkin. (5)	1,156	1,233	1,237	93.8	93.4	12,801	13,974	14,736	28,446	31,053	32,746	91.6	86.9				
(6)	1,841	2,080	2,069	88.5	88.9	20,199	24,911	25,913	44,886	55,356	57,583	81.1	77.9				
Japan . . .	7,775	7,779	7,915	100.0	98.2	212,116	289,882	247,420	471,359	644,169	549,810	73.2	85.7				
Siam 7)	8,461	8,019	7,596	105.5	111.4	114,288	110,402	95,982	253,968	245,333	213,289	103.5	119.1				
Syria & Lebanon . .	2	1	8)	197.7	494.3	19	15	5	43	34	12	123.9	364.0				
Turkey . . .	74	51	52	143.1	140.1	1,256	957	747	2,791	2,126	1,661	131.3	168.1				
Egypt . . .	407	438	301	92.8	134.9	11,304	11,775	8,054	25,120	26,166	17,898	96.0	140.3				
Totals . .	104,454	106,445	105,590	98.1	98.9	1,450,186	1,562,254	1,531,032	3,222,572	3,471,605	3,402,224	92.8	94.7				

*) Countries not included in the totals. — 1) First crop. — 2) Second crop. — 3) Third estimate. — 4) First half-year. — 5) Rice of the fifth month. — 6) Rice of the tenth month. — 7) First estimate. Area sown and production in the whole country. The corresponding figures for the harvested area are as follows: 7,591; 7,448; 6,589; 10.9; 115.2. — 8) Area less than 500 acres.

There was extensive flood damage in the riverine *mukims* of Perak and crop prospects there were poor in consequence. In the newly-developed Panchang Bedina area of Selangor transplanting was delayed by the inadequacy of water supplies and it was not expected that planting would be undertaken in the northern portion of the area.

In general crop prospects were still difficult to estimate. Extensive flood damage that occurred earlier in the year was expected to materially affect the yield in Kedah and dry conditions in the late-planted areas of Province Wellesley and Malacca militate against the development of crops in those areas. In Krian, however, it was considered that, with good harvesting weather, returns would not be materially less than those in the previous season.

French West Africa: Harvest prospects in French Guinea were good.

Sierra Leone: The new crop was reported in January to be abundant.

POTATOES

Hungary: The selecting of seed potatoes was in progress on 6 March but planting had not commenced at this date.

Malta: In January the winter crop of potatoes was not considered satisfactory and it was anticipated that exports this year would be very limited.

THE SUGAR CAMPAIGN

A full review of the forecasts of the area which is likely to be sown to sugar-beet this year cannot be attempted at the present juncture. However, by taking account of the information received by the Institute from the various Governments and Associations of sugar manufacturers in reply to the annual enquiry, a preliminary idea of the acreage to be cultivated with sugar-beet this year can be formed though statistical data are unavailable. Where official estimates or those of producers' associations are not available, account has been taken with caution of the more reliable sources of private information.

The *Verein der Deutschen Zuckerindustrie* intimates that an estimate of the area to be sown to sugar beet this year in Germany cannot yet be made as certain outstanding questions have not yet been settled. It can be stated with confidence, however, that there will be an increase compared with last year though the magnitude cannot be determined at present. A first estimate will be available in all probability at the end of March or the beginning of April.

The Ministry of Agriculture of Belgium states that the area reserved for sugar-beet cultivation in 1935 will be practically equal to that of 1934.

The General Statistical Office of Bulgaria is not yet in a position to furnish an estimate of the area to be sown with sugar-beet this year as the conversations between the Ministry of National Economy and the sugar manufacturers on the question of sugar-beet sowings have not yet reached a definite conclusion. The object of the discussions is to decide whether sugar-beet will be cultivated this year.

The Irish Free State Sugar Association estimates that there will be an appreciable expansion in beet-sugar cultivation this year.

The Society of Beet Producers of Finland states that the area to be occupied by sugar beet this year will be practically the same as that of 1934.

The *Comité Central des Fabricants de Sucre de France* cannot state at present what the sugar-beet area will be this year, but it is certain that there will be a decrease. Production in the coming campaign has been fixed at 18,700,000 centals (935,000 short tons) of refined sugar against 19,600,000 centals (980,000 short tons) last year. The decrease in the area sown, however, will undoubtedly be greater than the contraction called for in production in view of the fact that many factories still have considerable stocks to dispose of.

The British Sugar Beet Society communicates that, in accordance with the plan of government assistance, the beet area in Great Britain will be reduced to 375,000 acres, a decrease of 7 to 8 % on the figure for last year.

The National Association of Hungarian Sugar Manufacturers states that the area to be sown to sugar-beet in Hungary will be practically the same as that of last year.

The *Consorzio Nazionale Produttori Zucchero* of Italy communicates that, in accordance with the growing contracts made with the *Associazione Nazionale Bieticoltori*, the area to be sown to sugar-beet this year will be the same as that of 1934. Hence a crop of 48,000,000 centals (2,400,000 short tons) of beet may be expected. (Last year, however, the same area yielded 58,500,000 centals (2,920,000 short tons).

The Statistical Bureau of Latvia has not communicated figures of the beet area in 1935 but states that, as the area cultivated in 1934 was sufficient to meet factory requirements in full, the same area will be cultivated in 1935 as in the previous year.

A communication from the Statistical Section of the Romanian Ministry of Agriculture indicates that the area intended to be planted with sugar beet will be slightly smaller than that cultivated in 1934. The decrease is estimated at about 5 %.

In Sweden also, according to the Central Statistical Bureau's preliminary estimates, a small decrease is probable.

The Secretariat of the Union of Swiss Peasants states that the contemplated sugar beet acreage in Switzerland in 1935 will be practically the same as it was a year ago owing to the fact that the single sugar factory existing in Switzerland cannot cope with the output from a greater acreage.

The Czechoslovakian Sugar Manufacturers' Society states that preliminary estimates of the beet acreage will be available only at the beginning of April, but it is thought at present that there will be in all probability a small contraction compared with 1934.

Reductions are expected also in Austria, and Spain.

An increase in the sugar beet area is to be expected in the U. S. S. R. since, according to the Five Year Plan, the area to be cultivated this year is 2,965,000 acres against 2,906,000 stipulated in the plan for last year.

Nothing definite is yet known of the area to be cultivated during the present year in the United States, but in Canada beet sugar production is to be intensified.

Production of Beet-sugar (raw).

COUNTRIES	PRODUCTION 1 SEPT. - 28 FEB.		TOTAL PRODUCTION DURING THE SEASON				
	1934-35	1933-34	1934-35 1)	1933-34	Average 1928-29 to 1932-33	% 1934-35	
						1933-34 = 100	Average = 100
	thousand cents	thousand cents	thousand cents	thousand cents			
Germany	36,433	30,816	36,433	31,508	40,038	116	91
Austria	4,921 2)	3,758	4,982	3,758	3,111	133	160
Belgium	—	—	5,842	5,360	5,553	109	105
Bulgaria	—	—	50	916	763	5	7
Denmark	—	—	1,992	5,375	3,291	37	60
Spain	—	—	7,055	4,850	5,827	145	121
Irish Free State	1,643	778	1,643	778	455	211	361
Finland	256	145	256	161	83	160	309
France	26,380	20,333	26,390	20,787	21,715	127	121
Great Britain	14,670	11,163	14,670	11,163	6,842	131	214
Hungary	2,638 2)	2,985	2,638	2,989	4,099	88	64
Italy	7,835	6,582	7,870	6,713	8,430	117	93
Latvia	—	—	1,058	714	229	148	462
Lithuania	—	—	335	178 3)	283	188	121
Netherlands	—	—	5,108	6,099	5,556	84	92
Poland	2) 9,832 2)	7,561	9,850	7,560	14,759	130	67
Romania	2) 2,565 2)	3,419	2,568	3,554	2,447	72	105
Sweden	—	—	5,953	6,720	3,740	89	160
Switzerland	—	—	198	198	140	100	141
Czechoslovakia	13,954	11,308	13,999	11,371	20,650	123	68
Yugoslavia	—	—	1,367	1,642	2,324	83	59
<i>Total Europe a)</i>	—	—	150,257	132,394	150,335	113	100
U. S. S. R. 4)	—	—	31,000	24,250	26,552	128	117
<i>Total Europe b)</i>	—	—	181,257	156,667	176,887	116	102
Canada	—	—	1,418	1,493	1,027	95	138
United States	—	—	24,989	35,312	24,946	71	100
<i>Total North America</i>	—	—	26,407	36,805	25,973	72	102
Japan	—	—	764	564	570	136	134
Turkey in Asia	—	—	1,433	1,598	335	90	428
<i>Total Asia</i>	—	—	2,197	2,162	905	102	243
GENERAL TOTALS { a)	—	—	178,861	171,361	177,213	104	101
{ b)	—	—	209,861	195,611	203,765	107	103

a) Not including U. S. S. R. — b) Including U. S. S. R. — 1) Approximate data. — 2) Production to the end of January. — 3) Average 1931-32 to 1932-33. — 4) Sand sugar.

If the beet producing countries are taken as a whole, it may be expected from the preliminary indications and in view of the fact that the output of the present campaign, added to the stocks carried over from the preceding campaign, is greatly in excess of consumption that the total area to be cultivated in 1935 will be smaller than that of 1934.

As regards estimates of production of beet-sugar and cane-sugar in the current season there have been no notable changes.

E. R.

France: A considerable reduction in sowings will occur this year as a result of the decision made by manufacturers to reduce the contingenting of area in agreement with growers. Weather conditions up to the present have not been favourable to preparatory work.

Hungary: Owing to the dampness of the soil, preparation of the soil for the sowing of sugar beet had not begun up to the end of the first week in March.

U. S. S. R.: A decree of 13 March fixes the quantity of sugar-beet to be supplied to the State in the 1935-36 campaign by collective and private holdings in accordance with the contracts entered into with them. This does not include the beet to be delivered as payment in kind to the tractor and agricultural stations for the work performed by them. Ukraine is to deliver 190,000,000 centals (9,500,000 short tons) of the total.

The area sown to sugar-beet in the present year in collective and individual holdings have been exempted from agricultural taxes.

Antigua: At the end of January it was reported that the weather had been comparatively cold during the month and that after the heavy showers in November rainfall had been insufficient and much more moisture was needed. It was expected that grinding operations would start towards the end of February. The quantity of sugar likely to be manufactured by the Antigua sugar factory was estimated at about 360,000 centals (18,000 short tons). No estimates were given for the Bendals Factory.

Barbados: The rains which lately fell were very beneficial to the crop so that towards the end of January prospects showed some improvement.

British Guiana: Total sugar production in 1933-34 was 2,891,000 centals (144,500 short tons) as compared with 3,180,000 (159,000) in 1932-33 and 2,851,000 (142,500) on the average of the five preceding seasons. Percentages: 90.9 and 101.4.

Jamaica: At the end of January grinding of the 1934-35 cane crop was general and the output of sugar was expected to exceed that of 1933-34.

St. Kitts: Grinding operations, which should have started on January 28th, were delayed owing to labour troubles.

Trinidad: At the end of January the coming sugar crop was estimated to be about 20 % below that of the last season.

St. Lucia: During the month of January the weather was comparatively wet and cool. Condition of the sugar-cane was on the whole very good, no serious damage having been caused by the frequent showers. Reaping was expected to begin in February.

Taiwan: According to the most recent estimate area cultivated to sugar-cane this year will be about 257,000 acres against 185,000 in 1933-34 and 226,000 on the average

of the five years ending 1932-33, percentages 138.8 and 113.8. The corresponding production is estimated at about 150,874,000 centals (7,544,000 short tons) against 101,203,000 (5,060,000) and 135,983,000 (6,799,000); percentages 149.1 and 111.0.

India: Grinding continues. Condition of the standing crop in Madras was fair save in a number of districts where it had been affected by the lack of rain.

Production of cane-sugar.

COUNTRIES	1934-35 1)	1933-34	Average 1928-29 to 1932-33	1934-35 1)	1933-34	Average 1928-29 to 1932-33	Percentages for 1934-35	
							1933-34 = 100	Average = 100
	Thousand centals	Short tons			%			
AMERICA.								
Argentina	7,518	6,961	7,863	376,000	348,045	393,136	108	96
Brazil	15,432	14,330	22,000	800,000	720,000	1,099,986	108	70
Cuba	51,853	50,945	78,613	2,593,000	2,547,193	3,930,573	102	66
Ecuador	441	441	451	20,000	20,000	22,554	100	98
United States (La) . .	4,560	4,100	3,584	228,000	205,000	179,200	111	127
Guadeloupe	882	921	578	40,000	46,073	28,895	96	153
Jamaica	1,676	1,609	1,291	84,000	80,000	64,536	104	130
Mexico	5,291	4,145	4,742	260,000	207,000	237,082	128	112
Peru	8,819	9,538	8,676	440,000	476,902	433,772	92	102
Puerto Rico	15,763	22,077	16,222	788,000	1,103,311	811,101	71	97
Dominican Republic .	8,047	8,565	8,306	402,000	428,250	415,308	94	97
Total America . . .	120,282	123,632	152,326	6,031,000	6,182,274	7,616,143	97	79
ASIA.								
Taiwan	20,360	14,265	17,725	1,018,000	713,226	886,224	143	115
India 2)	113,904	109,133	78,266	5,695,000	5,457,000	3,913,000	104	145
Japan 3)	2,321	1,635	1,915	116,024	81,740	95,773	142	121
Java	10,141	13,604	55,081	510,000	680,184	2,753,998	75	18
Philippine Is. 4) . . .	17,637	31,526	21,572	900,000	1,580,000	1,078,572	56	82
Total Asia	164,363	170,163	174,559	8,239,024	8,512,150	8,727,567	97	94
AFRICA.								
Egypt	2,870	3,406	2,892	145,000	170,303	144,583	84	99
Madagascar	190	183	133	9,500	9,150	6,650	104	142
Mauritius	3,920	5,764	4,954	196,000	288,200	247,720	68	79
Reunion	1,543	1,707	1,042	80,000	85,350	52,107	90	148
Union of South Africa	7,160	7,823	6,690	358,000	391,173	334,471	91	107
Total Africa	15,683	18,883	15,711	788,500	944,176	785,531	83	100
OCEANIA.								
Australia	14,780	14,358	12,304	740,000	717,913	615,180	103	120
Hawaii	20,503	20,580	19,557	1,030,000	1,028,990	977,817	100	105
Fiji Is.	2,491	2,579	2,170	125,000	129,000	108,508	97	115
Total Oceania	37,774	37,517	34,031	1,895,000	1,875,903	1,701,505	101	111
GENERAL TOTALS . .	338,102	350,195	376,627	16,953,524	17,514,503	18,830,746	97	90

1) Approximate data. — 2) Production of *gur*. — 3) Production of sugar (refined and raw) and molasses. — 4) Production of sugar and *panocha*.

Java: The west monsoon had not set in during the first half of March, but the amount of rainfall was satisfactory except in certain areas where there was excessive rain unevenly distributed. Sultry weather persisted. The cane was in satisfactory condition but here and there sudden showers and winds caused lodging. The first signs of tasselling were appearing. Generally speaking there was no disease or insect damage.

Egypt: The maturation of late sugar-cane cultivations is complete, and the harvesting and supplying of the crop to the factories for pressing is in progress. The harvested area is about 60 %, and the yield per acre is 4 % above the average. The preparation of the land for the new crop is in progress. Sowing of limited areas in some localities has already been started during the month, and the germination is satisfactory.

Purchases of sugar-cane for the 1934-35 campaign are estimated to amount approximately to 27,800,000 centals (1,390,000 short tons) of sugar-cane, a figure which may be slightly increased by purchases of inevitable surpluses at low prices. The production of sugar is estimated to amount to 2,900,000 centals (143,000 short tons). Corresponding figures for the 1935-36 campaign are 27,600,000 centals (1,380,000 short tons) and 2,760,000 centals (138,000 short tons).

Production of raw cane-sugar at the end of February, the second month of the sugar season, amounted to 1,448,500 centals (72,400 sh. tons), against 1,773,400 (88,700) at the same date last year, 1,891,700 (94,600) in 1933 and 1,783,400 (89,200) in 1932.

Mauritius: During the month of January the weather continued to be very favourable and the condition of the sugar-canes quite satisfactory. Crop prospects were excellent. Prices remained very low.

Union of South Africa: Crop condition in January was 9 % below normal. The weather was hot throughout the belt; more rain was needed.

VINES

Austria: Crop condition of vineyards on 1 March was 1.6 against 1.8 on 1 February this year and 2.4 on 1 March 1934. The vine-shoots ripened well and are healthy.

France: Throughout February the southern areas enjoyed fairly dry weather which made it possible to proceed regularly with pruning and other work in the vineyards. There were complaints, however, of the dry winter as rain in January and February is particularly beneficial. Weather turned cold and there were even considerable falls of snow. There was some frost which, however, did not cause loss. These conditions were favourable on the whole. The condition of vineyards in the South on 10 March was satisfactory.

In the other areas, however, weather was excessively wet and severe storms occurred. Temperatures were mild up to the beginning of March, when a considerable fall occurred with snow and frost. Vineyards do not appear to have suffered from these conditions, but work, especially digging, has been hindered.

Portugal: According to a private estimate, the production of 1934 amounts to 1,450,000 barrels of 121 Imperial gallons (145 American gallons), or a little more than 175 (210) million gallons of wine. This is 26 (32) million gallons, a more than 15 %, less than the output of 1933 and nearly 42 (50) million gallons, or 33 %, more than the average of the five previous years. However, in this total is included 180,000 barrels from the vineyards of direct producers, the gathering from which was forbidden by Ministerial order, so that effective production is reduced to a little less than 154 (185) million gallons which, however, is still above the average. The quality of the wines produced is good but the alcoholic degree is lower than was expected.

Vines.

COUNTRIES	AREA					PRODUCTION OF WINE							
	1934	1933	Average 1928 to 1932	% 1934		1934	1933	Average 1928 to 1932	1934	1933	Average 1928 to 1932	% 1934	
				1933	Average							1933	Average
			1,000 acres					1,000 Imperial gallons			1,000 Amer. gallons		
Germany 1) 2)	180	178	177	101.5	101.8	99,535	39,563	50,362	119,533	47,512	60,480	251.6	197.6
Austria 2)	67	64	75	103.6	89.3	17,356	20,456	22,055	20,843	24,566	26,486	84.8	78.7
Bulgaria 1) 2)	225	217	193	103.6	116.4	67,067	52,539	40,903	80,541	63,095	49,121	127.7	164.0
Spain 1) 2)	...	...	3,314	...	...	449,624	434,754	464,465	539,958	522,100	557,781	103.4	96.8
France 2) s)	3,654	3,514	3,504	104.0	104.3	1,652,976	1,093,077	1,180,915	1,985,075	1,312,688	1,418,173	151.2	140.0
Greece 1) 2)	371	352	307	105.4	120.7	78,122	85,053	59,793	93,817	102,141	71,806	91.9	130.7
Hungary 1)	519	520	533	99.8	97.5	55,690	67,828	75,013	66,878	81,455	90,084	82.1	74.2
Italy (u)	2,446	2,435	2,171	100.4	112.7	672,008	726,682	906,076	807,021	872,679	1,088,116	92.5	74.2
Italy (m)	7,282	7,291	8,116	99.9	89.7	...	...	...	...	...	...	...	...
Luxemb. 1) 2)	3	3	3	100.0	82.4	3,080	1,246	1,337	3,698	1,497	1,606	247.1	230.3
Romania 2)	675	675	609	100.0	110.8	178,180	165,289	163,319	213,978	198,497	196,132	107.8	109.1
Switzerland	33	33	32	100.0	101.7	17,158	5,279	12,493	20,605	6,340	15,003	325.0	137.3
Czechoslov.	52	49	44	106.1	117.4	4,466	7,428	8,408	5,363	8,920	10,097	60.1	53.1
Total Europe	...	...	...	...	...	3,219,961	2,631,096	2,915,952	3,866,880	3,159,710	3,501,797	122.4	110.4
*Syria & Leb.	129	122	121	105.5	106.7	—	—	—	—	—	—	—	—
Algeria 2)	958	922	683	103.9	140.2	484,887	368,040	327,376	582,306	441,983	393,150	131.7	148.1
French Morocco 2) 4)	36	24	15	152.1	242.8	12,759	9,833	4,913	15,322	11,808	5,900	129.8	259.7
Tunis . . .	135	125	99	107.9	136.9	37,396	31,237	23,910	44,909	37,512	28,714	119.7	156.5
Total Africa	1,129	1,071	797	105.5	141.8	535,042	409,110	356,199	642,537	491,303	427,764	130.8	150.2
GR. TOTAL . .	...	...	...	...	...	3,755,003	3,040,206	3,272,151	4,509,417	3,651,013	3,929,561	123.5	114.8

* Country not included in the totals. — s) For the totals, the figures of must production are converted into their equivalent of wine by the coefficient of 9/10.

u) Unmixed crop. — m) Mixed crop. — s) Areas and productions declared to the tax-offices, incomplete figures. According to preliminary estimates, bearing area on 1 June 1934 was about 90,000 acres less than bearing area on 1 June 1933. — 1) Production of must. — 2) Area bearing. — 3) Provisional approximate date. — 4) Including the quantity obtained from native vines grown on trellis (in 1933, 990,000 Imperial gallons or 1,200,000 American gallons).

Tunisia: The bad weather of January impeded pruning and cultivation work, which at the end of the month was in arrears, and encouraged the growth of weeds. The improvement in the weather which occurred in February made it possible to

finish pruning and to proceed with other operations. The crop condition of vines at the end of the month was satisfactory. The plentiful rainfall which was stored up during the course of the winter will be helpful to the crop.

Australia: Mildew attacks, hail, frost and, in some places, grasshoppers have appreciably reduced the vintage in Victoria and New South Wales. In the latter, the output will not reach a million Imperial gallons (1.2 million American gallons). The grape crop will be better and almost passable.

OLIVES

French Morocco: The olive crop, picking of which was finished in February, was good on the whole.

Olive and Olive-oil Production.

COUNTRIES	AREA					BRITISH MEASURES			AMERICAN MEASURES			% 1934/35	
	1934/35	1933/34	Aver. 1928/29 to 1932/33	% 1934/35		1934/35	1933/34	Aver. 1928/29 to 1932/33	1934/35	1933/34	Average 1928/29 to 1932/33	1933/ 1934	Aver- age
												= 100	= 100
	Thousand acres			1933/ 1934	Aver. = 100	Thousand centals			Thousand s) pounds t) Amer. gallons				
Spain . .	...	4,698	4,585	...	...	(s) 26,811	36,314	37,800	2,681,149	3,631,358	3,780,002	73.8	70.9
						(t) 5,031	6,838	7,348	66,109	89,856	96,551	73.6	68.5
France . .	—	—	—	—	—	s) 1,295	589	877	129,522	58,875	87,737	220.0	147.6
Greece 1).	—	—	—	—	—	(s) 617	540	783	61,730	53,982	78,324	114.4	78.8
						(t) 2,425	2,323	2,270	31,867	30,521	29,833	104.4	106.8
*Italy (a)	1,991	1,991	1,667	100.0	119.5	s) 28,479	25,843	29,214	2,847,937	2,584,344	2,921,439	110.2	97.5
Italy (b)	3,146	3,145	3,781	100.1	83.2	t) ...	3,611	4,734	...	47,450	62,206	...	...
Portugal .	—	—	—	—	—	s) 536	1,652	982	7,040	21,711	12,903	32.4	54.6
—													
Syria and Lebanon.	194	192	187	101.1	103.6	(s) 1,446	1,092	1,274	109,791	109,194	127,438	132.4	113.5
						(t) 212	349	239	2,781	4,584	3,140	60.7	88.6
—													
Algeria . .	...	168 2)	200	...	...	(s) (3) 292	3) 214	3) 276	3) 29,211	3) 21,366	3) 27,650	136.7	105.6
						(t) 1,275	4) 1,587	4) 3,417	4) 275,579	4) 158,678	4) 341,713	173.7	80.6
						(s) 303	183	442	3,980	2,408	5,804	165.3	68.6
French Mo- rocco . .	—	—	—	—	—	(s) 1,653	1,080	1,385	165,347	108,027	138,541	153.1	119.3
						(t) 254	161	242	3,332	2,115	3,175	157.5	104.9
Tunis . .	—	—	—	—	—	s) 1,323	1,323	955	17,382	17,382	12,544	100.0	138.6
TOTALS . .	—	—	—	—	—	t) 10,084	12,829	12,478	132,491	168,577	163,950	87.6	80.8

*) Country not included in the totals. — a) Pure crop. — b) Mixed crop. — s) Olives. — t) Oil. — 1) Olive production refers to table olives. — 2) Year 1932-33. — 3) Olives for preserving. — 4) Olives for oil.

Tunisia: Picking of olives, which had been seriously impeded in the northern and central areas (Bizerta, Tunis and Kef) by the bad weather of January, was completed nearly everywhere at the end of February. Results in general are average except in some northern areas, where they are good, and in some other parts and in the south where they are rather poor. Quality, on the whole, is good except in some northern and central areas where the bad weather had hampered gathering. The oil yield was below average in the Gabès and Sfax districts.

Pruning, which is rather limited this year, and work of cultivation were proceeding in February. Condition of vegetation of olive trees is good in general.

COTTON

U. S. S. R.: According to a governmental measure of 7 March, the quantity of unginned cotton to be delivered to the State during the year 1935-36 in accordance with the contracts made with collective and individual enterprises was fixed at 3,097 million lb. The regions which grow cotton on irrigated lands (Uzbekistan, Turkmenistan, Tajikistan, Kirghiz, Kara-Kalpak, Kazakstan, Azerbaijan, Armenia and Georgia) must supply in all 2,912 million lb., of which 136 million is to be Egyptian cotton. The remaining 186 million lb. is to be supplied by the areas known as the new cotton producing areas (North Caucasus, the Azov Black Sea region, the Stalingrad region, Crimea and Ukraina) where cotton is grown in unirrigated fields. According to the plan the total production of unginned cotton expected during the year 1935-36 is 3,417 million lb. of unginned cotton on a total area of 4,800,100 acres, of which 4,172,400 acres are on collective establishments, 375,600 on individual farms and 252,100 on State farms.

The measure referred to above also gives the rules to be followed in the making of contracts. Of these, the following are the most important: a reduction from 6 to 3 % in the interest to be paid on sums advanced to cotton growers and the granting of premiums to growers who obtain unit yields higher than those fixed. Further, in a considerable number of districts in regions where cotton is grown on irrigated land and where cotton cultivation is already fairly widespread but not as yet sufficiently stabilised, agricultural taxes are completely suspended for a period of two years in collective farms while individual farms receive an exemption of 50 %.

United States: Cotton ginned to specified dates and throughout the season. Quantities are given in running bales, except that round bales are counted as half bales. Linters are not included:—

Cotton ginned to	Cotton seasons				
	1934-35	1933-34	1932-33	1931-32	1930-31
1 August	99,787	171,254	71,163	7,307	78,188
16 August	353,888	459,528	251,451	90,608	572,810
1 September	1,397,886	1,396,139	865,160	565,753	1,879,919
16 September	3,130,797	3,102,121	2,645,574	2,092,758	3,736,120
1 October	4,958,346	5,908,071	4,835,990	5,409,657	6,303,895
18 October	6,748,223	8,608,090	7,309,094	9,496,965	9,254,968
1 November	7,920,231	10,355,031	9,247,045	12,124,295	10,863,896
14 November	8,632,991	11,248,200	10,533,684	14,207,613	11,962,827
1 December	9,029,792	12,106,377	11,635,089	15,018,403	12,837,099
13 December	9,174,241	12,356,276	12,081,404	15,354,212	13,259,413
16 January	9,380,348	12,556,729	12,414,899	15,996,382	13,594,388
<i>Total ginned</i>					
(1 March).	9,469,000	12,664,019	12,709,647	16,628,874	13,755,518
Equivalent 500 lb. bales, gross weight.	9,634	13,047,262	13,001,508	17,095,594	13,931,597
Average gross weight per bale in lb., counting round bales as half bales.	508.7	515.1	511.5	514.0	506.4

Egypt: Cotton ginned up to the end of February in bales of 478 lb. net weight:

	1935	1934	1933	1932	1931	1930	1929
Sakellaridis	166,520	208,980	210,440	216,190	301,610	435,780	445,360
Other varieties above:							
1 3/4"	216,060	185,870	95,060	887,430	900,860	982,010	980,950
1 1/4"	36,760	69,400	64,130				
1 1/8"	930,340	1,020,470	500,410				
<i>Total</i>	1,349,680	1,484,720	870,040	1,103,620	1,202,470	1,417,790	1,426,310
Scarto (linters)	28,580	29,760	20,140	29,390	29,180	33,540	40,700
<i>Total production (including Scarto)</i>	*) 1,616,500	1,776,900	1,027,000	1,317,300	1,714,900	1,767,800	1,671,800

*) Second estimate.

A big proportion of the general area assigned for the cotton crop has been prepared. This process is considered to be ten days earlier than last year in Lower and Middle Egypt. Sowing has been started since the beginning of February but the percentage sown is small; the cultivators having refrained from proceeding with this operation for fear of the changes of the weather. The germination is satisfactory. Weather has been favourable on the whole and water supply adequate.

Nigeria: Considerable quantities of new crop cotton were purchased in January and it was expected that active buyings would continue until the end of February.

Uganda: During the month of January the improvement in prospects west of the Nile was maintained and a top crop was expected. In the Busoga district the slight improvement recorded in the last report was not maintained. In the remainder of the Eastern Province crop prospects showed no improvement, conditions in the Bugwere, Bugishu and Budama areas having, if anything, become less favourable. In the Northern Province, in general, it was stated that the crop would be up to expectations.

Anglo-Egyptian Sudan: According to the latest information from the Government of Khartoum, the picking of Sakellaridis cotton is progressing well, and an increase of more than 5 % on last year's production is expected. The increase is noticeable especially in Gezira and Tokar. The quality of the crop is good. The production of American irrigated is smaller, but that of American rain grown is more than 50 larger. Taken altogether, the output expected this year is only smaller than the record of 1931-1932 and the difference in this case is slight.

FLAX

Belgium: An increase in flax growing is expected.

France: Conditions have not been very favourable for the preparatory work for the coming sowings, but an increase in area over last year is thought to be certain.

United States: According to the report of the Department of Agriculture on planting intentions as at 1 March, the flax area this year, after allowance is made for normal abandonment,* will be about 1,845,000 acres, or 23.1 % more than the sown area and 89.4 % more than the harvested area of 1934 when an unusually large acreage was abandoned.

TOBACCO

Belgium: An expansion in tobacco cultivation is expected.

Hungary: Beds for tobacco planting were being prepared at the end of the first week of March.

United States: According to a report of the Department of Agriculture on farmers' sowing intentions as at 1 March, the area indicated for harvest in 1935, allowance being made for normal abandonment, will be about 1,511,000 acres, or 13.2 %, more than the area harvested in 1934.

Nyasaland: Rainfall was excessive during the month of January and dry weather was needed to assure an improvement in crop prospects.

OTHER PRODUCTS

Cacao.

Brazil: Weather in February was very unsettled in Ilhéos. There were 381 mm. (15 inches) of rain during the month, the heaviest precipitation recorded in February for many years. Transport of the 1934-35 crop was practically completed. Prospects for the coming crop were considered to be satisfactory.

The following are the latest statistics of crop movement:—

Entries by rail (1000 lb.):

	February 1935	May 1934 to February 1935	February 1934	May 1933 to February 1934
Ilhéos zone	2.044	80.830	5.354	85.026
Rio de Contas zone	271	9.431	334	8.726

Trinidad: Weather in January was favourable for the cacao crop. Production was expected to be well above the average.

Gold Coast and British Togoland: During January the remaining pods ripened and by the end of the month some 2 % remained to be harvested. Weather favoured drying throughout the cacao areas, an average of 7 to 8 hours of sunshine being experienced in most districts. Very little rainfall was recorded. During the first half of the month no rain fell at any of the eight key stations whilst at five of them no rain was recorded for the whole month. The harmattan was intermittent; its incidence was normal but it extended later than usual.

The estimates of production for Ashanti, Western Province, Central Province and Trans-Volta are unchanged. In the Eastern Province the crop in Kwahu and Nsawam-Kibi districts was turning out larger than was expected.

The market was somewhat freer but there was still a larger lag than usual between harvesting and marketing, and the estimated stocks in farmers' hands at the of January were about 101 million pounds against 56 million at the same date end last season.

The following are the data of crop movement in the first four months of the season, in millions of pounds :

	January 1935	October 1934 to January 1935	January 1934	October 1933 to January 1934
Railway offloadings, Takoradi . .	30	112	43	139
Exports:				
Takoradi	34	76	35	91
Accra	41	106	33	89
All ports	97	246	91	230

Adding to the 246 million pounds exported up to 31 January by sea the 9 million pounds estimated exported across the eastern frontier, total exports for the four months amounted to approximately 255 million pounds. Deducting the carryover of 4 million minor crop, net exports are 251 million pounds. Adding to this the estimated total stocks of 157 million pounds, the marketed total is 408 million. The estimated total major crop being 522 million, the amount still to come in after 31 January was 114 million pounds. These estimates are based partly on estimated percentage returns from each district and partly on estimated stocks at various up-country centres and on road and rail movements. An independent commercial estimate based on the actual returns and estimates of buying firms also puts the crop at 522 million pounds.

The increased length of time in storage in farmers' hands has had an adverse effect on purity as the conditions of storage are far from ideal. According to the divisional officer in Ashanti, however while there is no doubt of the existence of parcels of cacao of exceptionally poor quality, it would be incorrect to state that the quality in general is extremely low. The percentage of mouldy and germinated beans has increased considerably. The mean percentage of mouldy beans was 4.1 against 2.6 for the January shipments in the past seven years. The mean percentage of germinated beans was 3.9 against the seven-year average of 2.2. The other defects were average. These figures are, however, not strictly comparable since the present seasons figures are of beans inspected under Ordinance XIV of 1934 and the seven-year means are of cacao shipped during the month of January. Purity in January was 85.9. Size of beans was 127.0 per 14 cubic inches or 104.7 per 4 ounces; average measurement in millimetres was $22.7 \times 12.1 \times 7.0$.

Nigeria: It was reported in January that the quality of the cacao crop was satisfactory. Prices continued higher than those of last season.

Tea.

India : In December very little leaf was plucked in North India. The season is now closed. Up to the end of December there was an increase of nearly $7\frac{1}{2}$ million lb. on the outturn to the same date in 1933.

In South India the weather was too dry to be altogether favourable. January was also dry and crop prospects remained poor until rain should fall. Outturn up to the end of that month was 11.8 % behind that to the same date last year.

Coffee.

French West Africa: Coffee cultivation is developing in French Guinea. The number of young plants not yet bearing is in some places nearly equal to the number bearing while in some instances the number of plants in nurseries is twice as large.

Kenya : During the month of January the weather was hot and dry. Coffee picking had been completed in most areas and an official report stated that the crop was better in quality and quantity than was anticipated.

Groundnuts.

United States: A report of the Department of Agriculture on farmers' planting intentions as of 1 March indicates that after allowance is made for normal abandonment the area indicated to be harvested this year will be about 1,840,000 acres or 1.2 % more than the area harvested in 1934. This figure refers to the acreage of groundnuts grown alone for all purposes.

India : Toward the end of February crop condition appeared only fair.

Nigeria : The amount of groundnuts marketed in the North up to the end of December was estimated at about 2,900,000 centals. A considerable decrease in supplies was observed early in January; this confirms the October forecast of a crop smaller than that of last year.

Tanganyika : During the month of January dry weather predominated except in the southern areas where abundant rainfall was experienced. Crop conditions were on the whole satisfactory.

Colza and sesame.

Austria: Crop condition of winter colza on 1 March was 2.0 against 1.9 on 1 February this year and 2.5 on 1 March 1934.

Hungary: Winter colza has wintered well. The seedings are thick and well developed. Frost damage is very slight.

Yugoslavia: According to the most recent estimate area cultivated to rapeseed this year is about 16,600 acres against 8,400 in 1933 and 19,900 on the average of the five years ending 1932; percentages 198.0 and 83.1. The corresponding production is estimated at about 120,000 centals (240,100 bushels) against 61,200 (122,400) and 113,800 (227,500); percentages 196.1 and 105.5

Sericulture.

COUNTRIES	QUANTITIES OF EGGS PREPARED FOR INCUBATION					PRODUCTION OF COCOONS				
	1934	1933	Average 1928 to 1932	% 1934		1934	1933	Average 1928 to 1932	% 1934	
				1933	Aver- age				1933	Aver- age
1,000 ounces			= 100	= 100	1,000 pounds			= 100	= 100	
Bulgaria	27	27	36	100.6	76.3	2,956	3,006	3,978	98.3	74.3
France	18	16	35	106.4	49.8	2,150	2,079	3,984	103.4	54.0
Italy	442	519	841	85.2	52.6	63,618	75,431	101,975	84.3	62.4
Totals for Europe .	487	562	912	86.3	53.3	68,724	80,516	109,937	85.4	62.5
Chosen s).	227	220	211	103.2	107.2	33,566	30,016	26,161	111.8	128.3
Japan { s)	2,732	2,864	2,735	95.4	99.9	400,062	413,525	422,161	96.7	94.8
Syria and Lebanon	2,944	3,527	3,383	83.5	87.0	320,851	422,830	386,434	75.9	83.0
Turkey	47	52	87	91.3	54.7	2,866	4,068	6,623	70.5	43.3
Turkey	53	46	54	115.3	98.2	6,614	4,171	2,812	158.6	235.2
GENERAL TOTALS .	6,490	7,271	7,382	89.2	88.0	832,683	955,126	954,128	87.2	87.3

s) Spring cocoons. — s) Summer-autumn cocoons.

SUPPLEMENTARY FIGURES

As the production and area for most countries were published in the February number of the Monthly Crop Report and Agricultural Statistics, it is not necessary to repeat them again this month. Hence only the new data and any modifications of the figures published last month are given in continuation. In another table is shown the total world production based on the figures received up to the time of going to press.

COUNTRIES	AREA					PRODUCTION							
	1934	1933	Average 1928 to 1932	% 1934 and 1934/35		1934	1933	Average 1928 to 1932	1934	1933	Average 1928 to 1932	% 1934 and 1934/35	
	—	—	—	1933	Aver.	—	—	—	—	—	—	1933	Aver.
	1934/35	1933/34	1928/29 to 1932/33	1933/1934 = 100	= 100	1934/35	1933/34	1928/29 to 1932/33	1934/35	1933/34	1928/29 to 1932/33	1933/1934 = 100	= 100
WHEAT	1,000 acres					1,000 centals			1,000 bushels				
Spain	11,101	11,169	10,964	99.4	101.2	104,162	82,942	89,068	173,600	138,234	148,443	125.6	116.9
England & Wales	1,759	1,660	1,311	106.0	134.2	39,155	35,235	25,420	65,259	58,725	42,366	111.1	154.0
Sweden	718	799	642	89.8	111.8	17,026	17,522	12,203	28,376	29,203	20,339	97.2	139.5
Japan	1,589	1,509	1,219	105.3	130.4	28,597	24,226	19,209	47,660	40,376	32,014	118.0	148.9
Palestine	—	—	—	—	—	1,830	980	1,637	3,050	1,633	2,728	186.7	111.8
Cyrenaica	22	15	20	146.1	110.1	107	15	52	179	24	86	730.1	207.9
Chile	2,120	2,104	1,606	100.8	132.0	...	21,185	16,120	...	35,307	26,865	...	...
RYE													
Belgium	544	554	565	98.2	96.3	11,649	12,493	12,106	20,802	22,310	21,618	93.2	96.2
Spain	1,451	1,460	1,528	99.4	95.0	12,419	11,593	12,083	22,176	20,703	21,577	107.1	102.8
Sweden	581	546	588	106.4	98.9	11,577	10,152	8,822	20,674	18,128	15,753	114.0	131.2
BARLEY													
Spain	4,502	4,633	4,593	97.2	98.0	61,996	48,003	48,605	129,161	100,009	101,261	129.1	127.6
Sweden	247	279	304	88.3	81.2	4,756	4,762	5,101	9,908	9,922	10,628	99.9	93.2
Palestine	—	—	—	—	—	1,521	748	693	3,169	1,558	2,007	203.4	157.9
Cyrenaica	110	89	81	122.6	135.0	292	273	238	608	568	495	107.0	122.8
Chile	147	235	155	62.6	95.1	...	3,227	2,403	...	6,723	5,006	...	...
OATS													
Belgium	735	738	705	99.6	104.2	15,083	18,309	15,296	47,135	57,216	47,801	82.4	98.6
Sweden	1,628	1,541	1,652	105.6	98.6	27,147	23,425	25,194	84,835	73,202	78,730	115.9	107.8
Japan	295	314	295	93.9	99.9	4,404	3,540	3,447	13,762	11,062	10,771	124.4	127.8
Chile	189	264	234	71.6	80.6	...	2,522	2,217	...	7,881	6,928	...	...
POTATOES													
Irish Free State	343	341	353	100.5	97.0	56,999	55,933	56,170	94,999	93,222	93,617	101.9	101.5
Sweden	325	327	339	99.4	95.9	42,823	43,597	39,540	71,370	72,659	65,899	98.2	108.3
Yugoslavia	641	615	578	104.2	110.8	40,649	32,366	28,517	67,746	53,949	47,527	125.6	142.5
Egypt	7	8	7	90.0	106.3	692	782	571	1,153	1,304	952	88.4	121.0
SUGAR-BEET													
	1,000 short tons												
England & Wales	396	364	248	108.9	159.7	90,120	73,449	46,129	4,506	3,672	2,306	122.7	195.4
Latvia	37	32	—	115.4	—	7,463	4,101	—	373	205	—	182.0	—
Sweden	125	125	91	100.1	138.0	41,049	40,541	24,287	2,052	2,027	1,214	101.3	169.0
Yugoslavia	64	74	125	85.7	51.1	10,583	11,233	18,575	529	562	929	94.2	57.0

COUNTRIES	AREA					PRODUCTION							
	1934	1933	Average 1928 to 1932	% 1934 and 1934/35		1934	1933	Average 1928 to 1932	1934	1933	Average 1928 to 1932	% 1934 and 1934/35	
	—	—	—	1933	Aver.	—	—	—	—	—	—	1933	Aver.
	1934/35	1933/34	1928/29 to 1932/33	1933/1934 = 100	= 100	1934/35	1933/34	1928/29 to 1932/33	1934/35	1933/34	1928/29 to 1932/33	1933/1934 = 100	= 100
COTTON (GINNED)													
1,000 bales of 478 lb.													
Yugoslavia . . .	3	2	2	147.7	133.2	3	2	2	1	1	1	225.1	153.8
Nigeria	—	—	—	—	—	200	113	100	42	24	21	175.8	198.2
Uganda	1,171	1,091	808	107.4	145.0	960	1,091	819	201	228	171	88.0	117.2
Angl.-Egyp. Sudan	365	333	341	109.4	106.8	938	646	675	196	135	141	145.4	139.1
FLAX													
1,000 pounds													
Yugoslavia . . .	26	28	31	95.5	85.0	a) 233	219	207	23,274	21,887	20,710	106.3	112.4
1,000 bushels													
						b) 19	22	23	33	39	42	85.1	80.0
HEMP													
1,000 pounds													
Yugoslavia . . .	91	75	74	121.4	123.8	a) 829	614	514	82,886	61,428	51,379	134.9	161.3
						b) 41	33	28	4,108	3,315	2,772	123.9	148.2
TOBACCO													
Yugoslavia . . .	18	28	41	64.2	43.5	133	193	283	13,336	19,292	28,286	69.1	47.1
Chosen	36	33	41	108.4	86.9	340	365	441	33,957	36,494	44,092	93.0	77.0
Hops													
Yugoslavia . . .	6	4	10	140.9	57.7	32	32	62	3,159	3,228	6,159	97.9	51.3

a) Fibre. — b) Seed. — 1) Less than 500 bales.

TOTALS OF WORLD AGRICULTURAL PRODUCTION

The following totals have been obtained from the data in the tables published for each product in February, which have been revised and completed. With the name of each product is indicated the number of countries for which data for 1934 are at present available and also the percentage of their total production in 1933 to world production in the same year as published in the 1933-34 Yearbook, where they comprised nearly all producing countries, including the U. S. S. R., the 1934 figures for which are not yet available.

Crop, number of countries comprised in the total and percentages of world production	AREA					PRODUCTION								
	1934 and 1934-35	1933 and 1933-34	Average 1928 to 1932 and 1928-29 to 1932-33	Percentages for 1934 and 1934-35		British measures			American measures			Percentages for 1934 and 1934-35		
				1933 and 1933-34 = 100	Average 1933-1934 = 100	1934 and 1934-35	1933 and 1933-34	Average 1928 to 1932 and 1928-29 to 1932-33	1934 and 1934-35	1933 and 1933-34	Average 1928 to 1932 and 1928-29 to 1932-33	1933 and 1933-34 = 100	Average 1933-1934 = 100	
Wheat (49 countries, 77 %)	234,568	243,061	249,995	96.5	93.8	2,012,611	2,215,499	2,255,945	3,354,285	3,692,424	3,759,833	90.8	89.2	
Rye (30 countries, 53 %)	46,358	46,106	47,190	100.5	98.2	507,997	588,396	540,059	907,141	1,050,710	964,394	86.3	94.1	
Barley (44 countries, 72 %)	56,773	59,934	64,224	94.7	88.4	615,061	641,367	705,795	1,281,399	1,336,204	1,470,431	95.9	87.1	
Oats (39 countries, 74 %)	89,799	95,792	100,729	93.7	89.1	846,399	991,700	1,141,502	2,644,979	3,099,040	3,567,169	85.3	74.1	
Maize (21 countr. 70 %)	121,044	135,732	134,251	89.2	90.2	1,217,888	1,693,505	1,819,200	2,174,801	3,024,121	3,248,573	71.9	66.9	
Rice (rough) (13 countries, 78 %)	104,454	106,445	105,590	98.1	98.9	1,450,186	1,562,254	1,531,032	3,222,572	3,471,605	3,402,224	92.8	94.7	
Potatoes (31 c. 71 %)	30,824	30,518	30,011	101.0	102.7	3,397,628	3,168,757	3,212,494	5,662,600	5,281,156	5,354,050	107.2	105.8	
Sugar-beet (23 countr. 89 %)	7,253	7,223	7,075	100.4	102.5	1,272,693	1,170,352	1,312,341	Thousand short tons	63,634	58,517	60,616	108.7	105.0
Cotton ginned (14 countries, 91 %)	66,937	69,314	78,079	96.6	85.7	99,354	116,797	118,093	Thousand bales of 478 lb.	20,785	24,435	24,706	85.1	84.1
Linseed (19 countries, 72 %)	12,393	10,519	14,016	117.8	88.4	56,976	48,270	63,474	Thousand bushels	101,744	86,197	113,346	118.0	89.8
Flax (fibre) (15 countries, 13 %)	554	445	642	124.4	86.2	2,452	2,002	2,831	Thousand pounds	245,155	200,180	283,074	122.5	86.6
Hemp seed (5 c. 2 %)	42	40	49	106.2	85.0	152	134	157	15,212	13,448	15,653	113.1	97.2	
Hemp (fibre) (7 countries, 30 %)	282	255	309	110.7	91.2	2,449	2,163	2,485	244,934	216,274	248,462	113.3	98.6	
Hops (7 countr., 96 %)	116	109	128	106.8	90.4	1,122	1,010	1,168	112,216	100,972	116,845	111.1	96.0	
Tobacco (14 countries, 43 %)	2,123	2,555	2,773	83.1	76.6	17,708	21,045	2 148	1,770,759	2,104,540	2,214,771	84.1	80.0	
Olive oil (8 countries, 75 %)	—	—	—	—	—	10,084	12,829	12,478	Thousand American gallons	132,491	168,577	163,950	78.6	88.8
Vines (15 countr. 82 %)	—	—	—	—	—	Thousand Imperial gallons	3,755,003	3,040,206	3,272,151	4,509,417	3,651,013	3,929,561	123.5	114.8
Silk (7 countr. 90 %)	2) 6,490	2) 7,274	2) 7,383	89.2	88.0	Thousand pounds	832,682	955,127	954,131	832,682	955,127	954,131	87.2	87.3

1) Wine. — 2) Thousand ounces of eggs in incubation. — 3) Cocoons

FODDER CROPS

Austria: Crop conditions of the chief fodder crops on 1 March were the following: red clover, 2.2 (against 2.1 on 1 February this year and 2.6 on 1 March 1934); alfalfa 2.3 (2.1, 3.1); mixed clovers, 2.0 (2.0, 2.8); permanent meadows, 2.3 (2.1, 2.5); pastures, 2.4 (2.4, 2.4).

Belgium: The appearance of the clover crops is good. Meadows are very green, and if the weather continues mild it will soon be possible to pasture animals.

Irish Free State: The following are estimates of the area and production of certain fodder crops in 1934.

	1934	1933	Average 1928-32	% 1933 = 100	% 1934 Aver. = 100
	<i>Area (acres).</i>				
Hay	2,146,571	2,244,212	2,276,035	95.6	94.3
Turnips	159,419	169,902	183,056	93.8	87.1
Mangels	83,064	80,152	82,705	103.6	100.4
	<i>Production.</i>				
Hay (ooo centals)	97,168	103,821	109,732	93.6	88.6
	(ooo short tons)	4,858	5,191		
Turnips (ooo centals)	62,554	68,888	76,509	90.8	81.8
	(ooo short tons)	3,128	3,444		
Mangels (ooo centals)	36,218	35,211	36,342	102.9	99.7
	(ooo short tons)	1,811	1,761		

The weather during February was generally broken and unsettled with some heavy showers and high winds. Pastures were bare during the month, but ordinary winter cereal crops made satisfactory progress.

France: The mild wet weather which predominated up to the first days of March helped growth of leguminous plants, early fodder, meadows and pastures. The extremely wet and cold weather of March does not appear to have caused serious damage.

Great Britain and Northern Ireland: The greater part of February was mild and wet and pastures have kept fresh and green. Growth in temporary meadows was strong and vigorous and well forward for the time of year.

Hungary: Temporary meadows have survived the winter in good condition. Growth has not begun yet. Some damage by field-mice is reported. Growth in permanent meadows and pastures similarly has not yet begun.

Italy: During the first half of February catch crops and *marcite* (permanent meadows irrigated in winter) gave yields a little below normal owing to the low temperatures. Fodder in some provinces was insufficient for requirements.

Weather was finer in the second half of the month and fodder crops improved considerably in condition.

Portugal: Pastures were considerably helped by the rains of the first decade of February and their condition improved considerably.

Yugoslavia: In the following table are given the estimates of area and production of the principal fodder crops:

	1934	1933	Average 1928-32	% 1933 = 100	% 1934 Average = 100
	<i>Area harvested (ooo acres).</i>				
Mangels	81	78	65	103.5	125.2
Clover	279	273	263	101.9	106.1
Alfalfa	216	210	173	102.8	124.9
Permanent grass	4,510	4,601	4,439	98.0	101.6
Pasture	10,651	10,693	9,291	99.6	114.6

		1934	1933	Average 1928-32	% 1933 = 100	% 1934 Average = 100
<i>Production.</i>						
Mangels	(ooo centals)	11,890	10,268	7,199	115.8	165.2
	(ooo sh. tons)	594	513	360		
Clover	(ooo centals)	9,889	8,958	7,760	110.4	127.4
	(ooo sh. tons)	494	448	388		
Alfalfa	(ooo centals)	7,798	7,002	5,208	111.4	149.7
	(ooo sh. tons)	390	350	260		
Permanent grass . . .	(ooo centals)	69,563	74,984	66,932	92.8	103.9
	(ooo sh. tons)	3,478	3,749	3,347		

Egypt: The growth of bersim (clover) is satisfactory. The third cutting is being taken in the early cultivations. The crop is normal.

LIVESTOCK AND DERIVATIVES.

Livestock in Austria.

Only three censuses of livestock have been made in Austria since the war, namely, 7 March 1923, 14 June 1930 (census of agricultural holdings) and 22 March 1934. The figures of the last census are comparable only with those of 1923. The following table shows the provisional figures of the most important categories of livestock in Austria.

Classification	22 March 1934 head	7 March 1923 head	% 1934 1923 = 100 %
<i>Horses</i>	261,217	282,651	94.4
Young horses (1)	15,701	39,771	39.5
Mares	92,451	90,417	102.2
Stallions	21,409	32,517	65.8
Geldings	131,656	119,946	109.8
<i>Mules and Asses.</i>	908	1,400	64.9
<i>Cattle</i>	2,348,627	2,162,346	108.6
Young bulls under 1 year	162,409	393,826	125.1
Cow calves	280,653		
Young cattle	49,734		
Bulls 1 year old and over	83,830	68,143	123.0
Heifers	320,439	323,410	99.1
Cows	1,209,874	1,074,864	112.6
Cattle 1 to 3 years old	143,452	171,055	83.9
Cattle 3 years old and over	98,236	131,048	75.0
<i>Sheep</i>	263,400	597,413	44.1
Young sheep under 1 year	87,400	153,485	56.9
Sheep 1 year old and over	176,000	443,928	39.6

(1) Not yet used for work.

Classification	22 March 1934 head	7 March 1923 head	% 1934 1923 = 100 %
<i>Goats</i>	326,497	382,146	85.4
Goats under 1 year	68,991	53,729	128.4
Goats 1 year old and over	257,506	328,417	78.4
<i>Pigs</i>	2,822,966	1,473,112	191.6
Sucking pigs under 3 months	1,011,315	473,132	213.7
Young pigs 3 to 6 months old	991,963	680,131	224.4
Young pigs 6 months to 1 year old	534,305		
of which: Sows for reproduction	(151,041)	—	—
Boars for reproduction	(19,165)	—	—
Young pigs 1 year old and over	285,383	319,849	89.2
of which: Sows for reproduction	(204,460)	—	—
Boars for reproduction	(17,290)	—	—
<i>Poultry</i>	8,872,063	5,897,632	150.4
Fowls	8,678,573	5,707,316	152.1
Geese	93,455	114,813	81.4
Ducks	100,035	75,503	132.5
<i>Bee hives</i>	407,610	252,675	161.3

(1) Used for work.

In conformity with the general tendency which has prevailed in Europe during the last six years, a considerable decline is noticeable in the numbers of horses and draught animals.

The species and categories which are most important in the supply of meat for human consumption reveal a substantial increase compared with 1923.

Attention should be drawn in particular to the increase in the pig population which occurred for the greater part in the year 1933 and 1934 as a result of the provisions made by the Government for the protection of rearing at a time when the price of maize was very low.

Livestock in Lithuania.

Classification	December 1934 number	December 1933 number	December 1932 number	December 1931 number	December 1930 number
<i>Horses</i>	570,500	581,320	589,300	592,350	561,725
<i>Cattle</i>	1,158,440	1,155,770	1,154,320	1,120,520	1,033,787
of which milch cows	733,540	739,630	726,620	693,420	654,032
<i>Sheep</i>	611,110	629,860	625,290	605,890	603,597
<i>Pigs</i>	1,236,660	1,235,400	1,233,700	1,338,350	1,207,177
<i>Fowls</i>	3,410,700	3,532,800	3,526,180	3,740,640	3,259,892
<i>Geese</i>	284,550	279,850	276,060	241,570	211,877

Livestock, poultry and beehives in Luxemburg.

Classification	1 Dec. 1934	1 Dec. 1931	1 Dec. 1928	1 Dec. 1925
<i>Horses</i>	17,036	16,987	18,145	18,328
<i>Asses and mules</i>	115	157	248	287
<i>Cattle</i>	102,720	99,201	98,519	100,925
<i>Sheep</i>	7,246	7,738	9,767	10,563
<i>Goats</i>	4,391	5,117	6,662	9,993
<i>Pigs</i>	163,337	149,605	127,003	120,928
<i>Poultry:</i>				
<i>Fowls</i>	510,852	517,341	480,006	453,842
<i>Geese</i>	7,783	7,222	8,132	7,271
<i>Ducks</i>	5,191	5,639	6,653	6,215
<i>Turkeys</i>	2,155	1,405	1,225	1,238
<i>Guinea fowls</i>	509	—	—	—
<i>Pigeons</i>	20,861	—	—	—
<i>Beehives</i>	12,449	10,822	11,087	11,385
<i>Rabbits</i>	78,319	48,117	47,432	26,425

Dairy products in Norway.

Below are the recently published figures of production in 1933 with comparative figures for the four proceeding years.

Classification	1933	1932	1931 (thousand pounds)	1930	1929
<i>Milk processed in dairies and condensed milk factories</i> . .	1,103,474	1,065,209	1,015,347	942,867	901,473
<i>Skimmed milk</i>	317,246	283,493	198,399	109,918	91,751
<i>Sour whey returned to the supplier</i>	52,823	61,024	72,243	46,337	36,033
<i>Butter</i>	19,352	17,377	13,271	8,698	8,306
<i>Cheese:</i>					
<i>Full cream</i>	9,815	8,719	9,961	8,307	6,916
<i>Half cream</i>	5,229	6,010	5,631	4,649	3,789
<i>Quarter cream</i>	1,246	1,268	1,411	1,387	1,578
<i>Skimmed milk cheese</i>	3,984	3,717	4,612	4,178	4,301
<i>Other cheese</i>	485	333	146	191	164
<i>Sour goat whey cheese</i>	6,865	6,669	6,709	6,627	6,671
<i>Sour goat whey cream</i>	2,004	1,969	1,590	1,606	1,525
<i>Sour goat whey skimmed</i> . . .	4,517	4,411	4,700	5,310	5,676
<i>Casein</i>	2,390	1,964	1,856	2,803	3,130

Complete figures for 1934 comparable with those above are not yet available. However, figures reperring to about three quarters of the dairy factories are known and these are given below with corresponding figures for 1933.

	1934 (thousand pounds)	1933
Processed milk	1,032,120	996,193
Butter	18,611	17,831
Cream cheese	15,959	14,963
Skimmed milk cheese	4,116	4,971
Casein	3,627	2,458
Cream cheese and goat whey cheese	8,922	8,479
Skimmed whey cheese	4,504	4,636

Production of Milk in Poland in 1934.

According to the preliminary results of an enquiry made by the Central Statistical Office, the production of milk from cows in Poland in 1934 was 1,974,900,000 Imperial gallons (2,371,700,000 American gallons) of which 1,798,100,000 Imperial gallons (2,159,300,000 American gallons), or 91 % were produced on holdings not exceeding 50 hectares (123 acres) and 176,900,000 Imperial gallons (212,400,000 American gallons) from holdings exceeding 50 hectares.

The average yield per day of milch cows was 2.0 (2.4) gallons in holdings not exceeding 50 hectares and 2.7 (3.2) in holdings above 50 hectares.

Dairy Production of Switzerland for 1934.

The Swiss Dairy Commission supplied the following provisional dairy statistics on 31 January 1935.

Milk Herds:	1933	1934
Milch cows (census) Number	919,928	912,766
Goats for milking (estimate) „	160,000	160,000
<i>Milk production:</i>		
Cows (6,720 to 6,735 lb. per year) . . . thousand lb. {	6,327,288	6,293,667
Goats (880 lb. per year) „ {		
<i>Milk deliveries at central stations (Brougg estimates):</i>		
+ or — compared with the previous year % *)	— 0.45	+ 8.95
+ or — compared with 1913 % *)	+ 19.75	+ 20.19
<i>Utilization of milk:</i>		
	thousand lb.	
For feeding to live stock	992,083	992,083
For consumption in producers' households	859,806	881,852
For sale to other consumers % *)	1,433,009	1,447,758
Exported	362	573
Imported	21,138	21,760
For processing (cheese, butter, condensed milk, etc.).	3,021,004	2,993,006
<i>Utilization of processed milk:</i>		
Butter and cheese factories in the lowlands	2,419,140	2,397,756
Home-made	242,509	220,463
Cheese factories in the mountains	319,671	308,648
Condensed milk and other factories	39,683	66,139
<i>Dairy products obtained:</i>		
	lb.	
Cheese of all kinds (*)	106,924,600	122,136,502
Butter of all kinds (*)	63,934,300	56,218,065
Condensed milk, powdered whole milk (*)	14,330,100	26,455,560

Cheese controlled by the Swiss Cheese Trade Union (Emmental,

Gruyère, Sbrinz):		lb.
Winter 1932-33		23,748,034
Summer 1933		64,201,218
Winter 1933-34		19,321,318
Summer 1934	(*)	56,200,000

1934 lb. 1933

Butter produced under the control of the Central Union of Milk Producers (in receipt of the subsidy):—

Centrifugal milk butter	(*)	39,746,000	31,676,108
Whey butter (from cheese factories)	(*)	8,818,000	8,716,020

*) Provisional data.

Milk deliveries at the collecting centres controlled by the Office for Price Information of the Swiss Union of Peasants at Brougg have declined by barely a half of one percent. compared with 1933. The total production of milk in 1934 is greater than that of 1933 owing to the increase in the number of cows and to the turn-over from stock raising to dairy production in the mountain districts. In the low lying areas the effects of the contingenting of production are shown in the milk deliveries inasmuch as domestic processing has increased slightly.

The decline in the production of cheese and condensed milk is offset by the increased butter production. The decline in cheese exports has led to a rather considerable increase in stocks. It was not possible to work off all the surplus butter before the end of last year.

The consumption of milk in the towns still shows a tendency to fall somewhat. That of butter and cheese is maintained but consumers are more and more showing a preference for cheap types such as kitchen cheese, Tilsit, etc.

Slaughtering of meat animals in Switzerland in 1934.

The Federal Office of Industry, Arts, Crafts and Labour has made an enquiry into the number of meat animals slaughtered in 42 Swiss towns.

This enquiry covers half the slaughtering of the whole country. It was seen after several verifications that the variations revealed in the figures thus obtained generally agree with the variations in the corresponding figures for the whole country.

The figures for each of the years 1927 to 1934 for the 42 towns in question are as follows:—

Years	Number of slaughtering		Yield in metric tons	
	Absolute number	1927 = 100	Absolute weight	1927 = 100
1927	641,874	100	64,918.9	100
1928	690,644	108	67,175.7	103
1929	702,650	109	70,177.5	108
1930	673,223	105	70,143.6	108
1931	753,786	102	69,755.3	107
1932	716,837	112	70,542.6	109
1933	719,382	112	75,235.1	116
1934	730,296	114	76,692.1	118

Both the number of slaughtering and the weight obtained show an increase of 2 %. The 1934 totals are the highest recorded since 1927 and exceed the latter by 14 % in the case of the number of animals slaughtered and by 18 % in the case of weight. The increases over the 1933 totals must be attributed largely to the various steps taken to encourage the disposal and utilization of meat animals. It is not yet possible to say whether the fall in meat prices has also helped to increase the consumption of this type of foodstuff or to what extent it has done so.

The following table allows a comparison to be made by kinds of animals between the figures for 1933 and 1934:—

Categories of animals	Number of slaughtering				Net weight in metric tons			
	January-December		Difference		January-December		Difference	
	1934	1933	absolute	%	1934	1933	absolute	%
Bulls	10,386	13,951	— 3,565	— 26	3,977.8	5,161.9	— 1,184.1	— 23
Oxen	9,573	10,125	— 552	— 5	3,398.2	3,553.8	— 155.6	— 4
Cows	46,392	39,180	+ 7,212	+ 18	12,479.6	10,852.9	+ 1,626.7	+ 15
Heifers	33,266	28,519	+ 4,747	+ 17	9,081.7	7,700.1	+ 1,381.6	+ 18
Calves	228,480	218,863	+ 9,617	+ 4	13,708.8	13,131.8	+ 577.0	+ 4
Sheep	38,942	40,644	— 1,702	— 4	817.9	853.6	— 35.7	— 4
Goats	589	521	+ 68	+ 13	8.9	7.8	+ 1.1	+ 13
Pigs	359,635	364,809	— 5,174	— 1	32,367.1	33,197.6	— 830.5	— 3
Horses	3,033	2,770	+ 263	+ 9	852.1	775.6	+ 76.5	+ 10
TOTAL . . .	730,296	719,382	+ 10,914	+ 2	76,692.1	75,235.1	+ 1,457.0	+ 2

Substantial increases over last year occurred in cows, heifers and calves and fairly considerable declines in bulls and pigs.

Average weights of the chief kinds of live stock slaughtered in 1934 and 1933 are the following:—

	1934	lb.	1933		1934	lb.	1933
Bulls	845		816	Heifers	602		595
Oxen	783		774	Calves	132		132
Cows	593		610	Pigs	198		201

Livestock and Poultry in Canada.

The results of the December Survey of Live Stock and Poultry are shown below with comparative figures for June 1934 and December 1933.

	December 1934	June 1934	December 1933
Cattle and Calves	8,485	8,952	8,460
Swine	3,649	3,654	3,588
Sheep and Lambs	2,738	3,421	2,738
Hens and Chickens	46,487	55,429	46,643

The total number of cattle and calves on Canadian farms at 1 December 1934 is placed at 8,485,000 head, showing a decrease of 467,000 head or 5.2 %

compared with the 1 June 1934 figures and a small increase of 25,100 head compared with the numbers on farms at 1 December 1933. The reduction from the June figures is greater than the usual seasonal trend and the increase over the previous December figures is very slight. These tendencies indicate that the rate of increase in the cattle population is slowing up.

The milch cow population advanced from 3,659,200 head at 1 December 1933 to 3,847,400 at 1 December 1934, an increase of 5.1 %. Cows for beef also increased in numbers, recording the same percentage advance as milch cows, but the increase in the latter is greater than the increase recorded in the survey a year ago, while, in the case of cows for beef the increase fell considerably, showing thus that cows for beef are gaining in numbers at a slower speed than cows kept mainly for milking.

The numbers of calves and of steers two years old and over have decreased since the Survey of a year ago, reflecting the heavy liquidation of both mature and immature animals, due in part to the shortage of feed in some areas. The decline in calves may be regarded as indicating to some extent the expected trend in cattle production.

The number of cows to calve in the December to May period is 3,372,100, which is 205,100 or 5.7 % fewer than in the same period of 1933-34, another indication that the upward trend of cattle population noticeable in the last three years is at or near its end.

The number of hogs shows a decrease of 5,100 head since June and an increase of 61,100 head since 1 December 1933. The number recorded in the June Survey was well below the number held a year previously. Despite this fact marketings remained higher until near the end of the year. Farrowings in the June to December period of 1934 were 3,391,600, a slight increase on those of the same period in 1933. There was a net increase in the number of pigs saved per litter which contributed to increased numbers on hand at December 1934.

The number of sheep and lambs on 1 December 1934 shows the same seasonal decline from June as a year ago and is practically the same as the numbers shown in the Survey of December 1933. The number of ewes to lamb in the December-May period of 1934-35 is 1,907,300. This is considerably higher than the number in the same period of 1933-34 and gives evidence of a prospective increase in the sheep population.

The number of hens and chickens on farms on 1 December 1934 shows little change from the number in the previous December, though the seasonal decline is slightly greater than in 1933. The downward movement in the production of hens and chickens appears to have been checked.

Wool Production in the United States in 1934.

The production of wool in the United States in 1934 amounted to 418,158,000 lb. of which 357,658,000 lb. was shorn wool and 60,500,000 lb. was pulled wool. This compares with a total of 428,921,000 lb. in 1933, 412,540,000 lb. in 1932 and 438,328,000 lb. in 1931.

The estimated number of sheep shorn in 1934 was 45,192,000 head compared with 44,769,000 head in 1933 and 44,431,000 head in 1932. The weight of wool per sheep shorn was 7.91 lb. in 1934, 8.15 lb. in 1933 and 7.77 in 1932.

The estimated production in 1934 does not include wool from the skins of the 3,067,000 ewes that were bought by the Agricultural Adjustment Administration and slaughtered for food or condemned and killed.

The New Zealand Dairying Industry.

The number of dairy factories in operation in 1933-34 was 482 against 478 in 1932-33, while the number of persons employed in the industry increased by 5 %. The cost of butterfat purchased by factories increased by almost 10 %.

During 1933-34 butterfat amounting of 391,961,000 lb. was sent to dairy factories, an increase of 8 %. Of this amount 75 % was used for butter-making and 24 % was required for cheese-making, while the remaining 1 % was utilized for the manufacture of condensed and dried milk and for other purposes. These uses absorbed respectively 10 %, 3 % and 1 % more butterfat than in the preceding year.

The production of butter was 3,187,212 cwt.; against 2,926,990 cwt. in 1932-33, that of whey butter was 50,826 cwt. against 47,792 cwt., and that of cheese 2,135,599 cwt. against 2,171,181 cwt. Total values increased in every case.

International Trade in Cheese in 1934.

The volume of the world trade in cheese, which has been declining continuously since 1929, underwent a further reduction in 1934 as is shown by the total exports of the 7 countries which together provide about 9/10 of the quantity placed on the world market.

Exports of Cheese (in thousand lb.)

	1934	1933	1932	1931	1930	1929
Netherlands	134,892	140,902	170,061	190,458	206,737	211,237
Italy	55,283	52,779	66,529	88,948	80,974	71,803
Switzerland	39,143	45,347	43,700	54,307	66,143	69,726
France	25,973	25,034	29,211	34,289	38,921	40,609
Denmark	13,891	22,220	14,535	9,383	12,626	14,513
New Zealand	222,266	222,088	200,527	183,271	203,053	199,257
Canada	61,167	74,168	86,940	84,788	80,163	92,945
Total	<u>552,615</u>	<u>582,538</u>	<u>611,503</u>	<u>645,444</u>	<u>688,617</u>	<u>700,090</u>

Exports in 1934 of all the countries concerned are 5 per cent below those of 1933 and 21 per cent below those of 1929. The heaviest decline was experienced by the European exporting countries which show a reduction of 6 per cent from 1933 and one of 34 per cent from 1929. Those of the two chief overseas exporting countries, notwithstanding the contraction in Canadian shipments, are only 4 per cent smaller compared with 1933 and 3 per cent smaller than 1929. Accordingly, the ratio of New Zealand's and Canada's contribution to total exports has increased from 42 per cent in 1929 to 51 per cent in 1934. That of the European countries has fallen from 58 per cent to 49 per cent.

Exports of Cheese

Year	(in thousand lb.)	Five European Countries	New Zealand and Canada
1929		407,888	292,202
1930		405,401	283,216
1931		377,385	268,059
1932		324,036	287,467
1933		286,282	296,256
1934		269,182	283,433

Exports from the Netherlands and Switzerland, which have declined continuously since 1929, reached the lowest figure in the period under consideration in 1934. Those from France were maintained at a level very close to the lowest recorded in 1933. Those of Denmark, which in 1933 showed a substantial growth, underwent a further serious contraction last year. Exports from Italy exceeded those of 1933, but they are still appreciably lower than those of the preceding years. Exports from New Zealand only maintained the high level reached in 1933 and these even slightly exceeded the record of that year.

The counterpart of exports as a whole is seen in the imports of the five chief importing countries which in all absorb about 9/10 of the total quantity appearing in the world market. Their total imports in 1934 were 6 per cent below those

Imports of Cheese

Countries	1934	1933	1932	1931	1930	1929
Great Britain and Northern Ireland 1) . . .	331,338	337,754	333,117	319,916	345,225	331,744
Germany	74,488	90,923	108,688	120,404	137,459	146,570
Belgium	47,818	48,418	45,660	49,600	51,106	46,456
France	35,173	46,105	52,267	82,810	65,519	51,070
United States.	47,532	48,398	55,621	61,990	68,310	76,377
Total	<u>536,349</u>	<u>571,598</u>	<u>595,353</u>	<u>634,720</u>	<u>667,619</u>	<u>652,217</u>

1) Re-exports have been deducted.

of 1933 and 18 per cent below the 1929 figure. The decline occurred almost exclusively in countries other than Great Britain. The purchases made abroad by the latter country were only slightly smaller than those of the previous year and in volume they have shown little change during the whole of the period under review. Quantities entering the other chief importing countries, on the other hand, have contracted continuously during recent years at a very marked rate.

Imports of Cheese

Year	(in thousand lb.)	Great Britain and Northern Ireland	Other countries
1929		331,744	320,473
1930		345,225	322,394
1931		319,916	314,804
1932		333,117	262,236
1933		337,754	233,844
1934		331,338	205,011

Imports of Germany and the United States in particular have fallen progressively so that their volume in 1934 was respectively only one half and two thirds of that of 1929. Imports into France which grew appreciably from 1929 to 1931, subsequently showed a fall also, and in 1934 stood at a figure almost $\frac{1}{3}$ smaller than that of 1929. Imports into Belgium did not reveal significant variations.

The stability in purchases from abroad for the English market during the whole of the period under review has benefited New Zealand, particularly in view of the fact that the proportion of New Zealand cheese included in total British imports grew from 61 per cent in 1929 to 68 per cent in 1933 and to 71 per cent in 1934. The growth in the relative importance of imports arriving from New Zealand has taken place at the expense partly of Canadian shipments and partly of the exports of the surplus producing countries of Europe.

Imports of Cheese in Great Britain and Northern Ireland

Source	(in thousand lb.)	1934	1933	1929
New Zealand		234,310	230,652	201,733
Canada		58,265	70,504	81,011
Netherlands		14,300	13,684	21,920
Italy		10,495	10,115	14,786
Switzerland		1,584	1,545	4,478
France	786	2,970

At the same time, the decrease in the purchases of the other importing countries has had more or less serious repercussions of the exports of the European exporting countries. Exports from the Netherlands and Switzerland have been particularly affected by the decline in German imports.

Imports of Cheese in Germany

Year	(in thousand lb.)	From the Netherlands	From Switzerland
1929		90,086	14,992
1933		53,530	2,945
1934		49,577	4,422

Switzerland and Italy have also felt the effects of the contraction of the United States market, on which Italy placed 26,049,000 lb. in 1934 and 23,077,000 lb. in 1933 compared with 31,125,000 lb. in 1929, while Switzerland sold 9,863,000 lb. in 1933, and 6,952,000 lb. in 1934 against 19,685,000 in 1929.

Current information on livestock and derivatives.

Irish Free State: Supplies of feeding stuffs were adequate to meet all normal requirements. Yields of milk were above average for the season of the year.

France: The health of cattle and stock-raising conditions were good in most parts at the end of February, but the shortage of dry fodder began to make itself felt in some places. On the other hand, the excessive rainfall often made it impossible to turn the animals out in meadows and pastures and the cold made it necessary to house animals everywhere at the beginning of March.

Great Britain and Northern Ireland: Cattle generally have done well and milk yields have been up to the average for the time of year. Sheep also have done fairly well and those on turnips, although suffering in some cases from the wet conditions, have made good progress. Winter keep has not been unduly drawn upon, and unless winter conditions become severe and persist, it is anticipated that no shortage will result. In Scotland sugar beet pulp has been used rather more extensively than in former years, making the shortage of roots and fodder less acute than it would otherwise have been. Supplies of most descriptions of concentrated feeding stuffs are ample for requirements and the present low price of home-grown wheat gives access to another source of supply of feed.

There is still a fair bite on the pastures and more stock is being kept out than is usual at this season.

Lambing prospects in England and Wales are favourable. Where lambing has commenced the fall has been satisfactory and the lambs are strong and healthy. Disease is less prevalent than usual and mortality was low.

Netherlands: Feeding conditions for milk cows in February were not unfavourable and the prospects are fairly satisfactory. In Friesland, Groningen and Zeeland milk production increased by 5 % and in Geldern by 10 %.

There was also an increase in Drenthe and Overijssel. In Limburg milk yield fell from 5 to 10 % and in the clay regions of North Brabant by 5 %. They were normal in the other provinces.

Argentina: Cattle were in healthy condition generally in February. Supplies of fodder for the winter are plentiful and in the National Territory of La Pampa they are in excess of requirements.

Canada: The wool clip of Canada in 1934 is estimated to amount to 19,544,000 lb. compared with 19,268,000 lb. in 1933.

United States: The early spring lamb crop of 1935 in the principal early lambing areas is a little smaller, probably 2 %, than the early crop of 1934. The condition of early lambs about 1 March this year averaged somewhat better than did the 1934 early lambs at the corresponding date.

Except in Texas and Missouri where supplies have been very short, the weather and feed conditions in all of the early lambing States have been favourable.

Tunisia: The excessive rains of January made the waterlogged pastures in the north inaccessible and vegetation was mediocre. The situation recovered in February with the improvement in the weather. At the end of February pastures were plentifully supplied everywhere and the stock-raising situation was satisfactory.

Union of South Africa: Exceptionally hot and dry conditions prevailed during January practically throughout the Union. Toward the end of the month, however, beneficial rains fell in some of the eastern districts of the Cape Province, in the Transkei and on the Natal highveld. Owing to scarcity of water and grazing in some of the Cape northwestern districts and Transvaal lowveld areas conditions became very critical and many farmers were compelled to trek with their stock.

Stock were generally in fair to good condition but internal parasites and blue tongue in sheep had been reported from several areas. Grazing was still plentiful but generally too rank for sheep and parched as a result of the continuous drought. The lamb crop was satisfactory.

TRADE

COUNTRIES	JANUARY				SIX MONTHS (August 1-Jan. 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1935	1934	1935	1934	1934-35	1933-34	1934-35	1933-34	1933-34	1933-34
Wheat. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Bulgaria	0	64	0	0	0	1,539	0	0	2,242	0
Hungary	450	1,074	0	0	3,155	9,226	0	0	15,496	0
Lithuania	51	0	0	0	108	0	0	0	0	0
Poland	4	29	0	29	302	179	9	503	1,596	501
Romania	0	0	0	0	0	134	2	7	141	17
Yugoslavia	40	0	0	0	1,874	209	2	0	553	0
U. S. S. R.	—	1,636	—	—	1,102	17,417	—	—	18,975	—
Canada	3,228	4,253	0	0	57,356	59,591	0	4	101,960	7
United States	13	1,720	1,144	518	1,325	4,572	8,470	3,479	11,995	6,757
Argentina	10,322	8,922	—	—	53,116	31,204	—	—	84,074	—
Chile	...	...	...	...	516	1	33	763	582	765
Syria and Lebanon	...	...	...	...	176	335	9	110	423	198
Algeria	...	...	...	...	3,704	3,117	161	183	6,493	340
French Morocco	273	95	0	0	2,039	3,104	0	0	5,082	0
Tunisia	...	...	...	...	606	470	139	434	1,124	1,122
Australia	5,584	4,235	0	0	22,470	17,884	0	0	36,090	0
New Zealand	...	...	...	...	0	181	4	55	181	119
<i>Importing Countries:</i>										
Germany	0	802	514	1,076	115	9,337	4,987	8,373	12,516	17,163
Austria	0	0	293	309	0	0	2,068	1,881	0	4,866
Belgium	331	44	1,545	1,938	1,118	648	14,436	13,126	1,459	26,226
Denmark	0	0	1,607	399	29	9	6,246	3,918	9	6,764
Spain	0	0	0	0	0	0	0	0	0	0
Estonia	75	0	0	0	75	0	0	0	0	0
Irish Free State	0	0	79	498	0	0	4,462	4,590	0	10,280
Finland	0	0	35	53	0	0	615	505	0	1,098
France	2,288	0	1,023	1,224	9,385	1,327	8,539	9,447	1,905	16,493
Gr. Brit. and N. Irel.	35	18	6,111	6,832	459	234	54,194	59,781	754	120,064
Greece	0	0	586	507	0	0	3,159	3,646	0	6,285
Italy	0	0	1,058	659	9	7	4,639	3,823	7	9,908
Latvia	...	...	...	...	53	1	0	0	0	0
Norway	0	0	410	313	0	0	1,911	1,903	0	3,761
Netherlands	4	452	933	556	7	459	5,772	8,153	1,303	13,649
Portugal	—	—	0	44	—	—	82	154	—	384
Sweden	0	0	86	88	157	0	525	606	375	1,089
Switzerland	0	0	747	763	2	4	5,459	5,871	7	10,558
Czechoslovakia	0	0	121	0	2	2	168	84	4	88
Ceylon	—	—	0	0	—	—	4	4	—	4
China	31	9	1,482	2,518	192	60	2,156	4,145	185	11,200
India	4	4	99	0	229	29	99	99	44	165
Japan	—	—	...	...	—	—	4,409	3,433	—	9,811
Egypt	...	...	...	...	2	7	112	2	9	7
Union of South Afr.	...	...	...	...	0	7	514	13	0	33
Totals	22,733	23,357	17,873	18,324	159,683	161,285	133,383	139,095	305,584	279,722
Rye. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Germany	4	505	1,305	82	51	5,128	2,136	1,962	6,945	2,196
Bulgaria	0	0	0	0	0	13	0	0	18	0
Estonia	0	0	0	0	494	0	22	0	0	0
Hungary	119	24	0	0	522	1,929	0	0	3,455	0
Latvia	...	...	...	...	1,032	0	0	0	0	0
Lithuania	77	11	0	0	357	24	0	0	49	0
Poland	1,444	657	0	9	5,867	5,531	0	229	10,479	229
Romania	0	0	0	0	0	0	0	0	0	0
Sweden	4	0	0	0	1,618	0	9	20	42	31
U. S. S. R.	—	225	—	—	882	1,967	—	—	3,316	—
Canada	0	0	0	0	384	1,424	9	0	1,444	0
Argentina	560	68	—	—	1,867	1,224	—	—	2,178	—
Algeria	...	...	...	...	22	13	0	0	22	0
<i>Importing Countries:</i>										
Austria	0	0	249	0	0	0	957	2	0	172
Belgium	2	0	44	317	2	11	1,043	2,294	11	4,804
Denmark	0	0	236	309	2	0	2,194	4,105	0	5,895
Finland	0	0	2	132	0	0	79	498	0	1,173
France	0	0	2	4	0	0	29	62	0	71
Italy	0	0	2	13	0	0	33	51	0	126
Norway	0	0	115	287	0	0	1,283	1,625	0	3,201
Netherlands	0	0	66	545	227	7	646	2,313	7	5,110
Switzerland	0	0	4	20	0	0	55	82	0	137
Czechoslovakia	0	0	0	2	4	15	11	11	18	20
United States	0	0	564	0	0	4	2,055	4,275	9	7,055
Total	2,210	1,490	2,589	1,720	13,331	17,290	10,561	18,529	27,993	30,220

COUNTRIES	JANUARY				SIX MONTHS (August 1-Jan. 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1935	1934	1935	1934	1934-35	1933-34	1934-35	1933-34	1933-34	1933-34
Wheat flour. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Germany	0	564	18	4	560	2,729	51	40	5,578	55
Bulgaria	0	4	0	0	0	20	0	0	93	0
Spain	0	2	0	0	0	60	0	0	31	0
France	498	273	110	77	2,663	2,207	888	437	4,149	937
Hungary	33	93	0	0	419	866	0	0	1,466	0
Italy	278	289	9	42	2,176	1,993	64	225	3,849	320
Lithuania	0	2	0	0	0	18	0	0	22	0
Poland	64	24	0	0	203	86	0	0	282	0
Romania	0	0	0	0	0	7	0	0	7	0
Yugoslavia	0	9	0	0	22	33	0	0	55	0
Canada	679	880	11	4	4,817	5,805	229	49	10,690	176
United States	518	710	0	0	4,378	4,001	0	0	7,584	2
Argentina	174	152	—	—	1,120	1,111	—	—	2,425	—
Chile	—	—	—	—	140	141	35	11	22	55
India	22	22	0	0	3,067	2,780	11	11	260	2
Japan	—	—	—	—	403	302	42	37	5,569	22
Algeria	—	—	—	—	11	0	0	4	897	101
French Morocco	2	4	0	0	342	53	9	18	49	9
Tunisia	—	—	—	—	7,408	5,602	0	0	223	249
Australia	1,318	1,105	0	0	—	—	—	—	10,922	0
<i>Importing Countries:</i>										
Austria	0	0	64	49	0	0	289	395	0	992
Belgium	2	2	18	44	20	24	88	172	42	287
Denmark	0	0	22	22	9	7	254	359	13	584
Estonia	0	0	0	0	0	0	0	0	0	0
Irish Free State	0	0	35	60	0	0	333	791	0	1,091
Finland	0	0	97	101	0	0	425	560	0	1,146
Gr. Brit. and N. Irel.	267	229	717	888	1,810	1,704	4,797	6,043	3,245	11,674
Greece	0	0	4	2	0	2	18	9	0	13
Norway	0	0	46	49	2	2	582	489	4	930
Netherlands	0	0	68	84	2	4	463	500	7	880
Portugal	—	—	0	0	—	—	53	73	—	143
Sweden	0	0	0	0	0	0	13	15	0	4
Czechoslovakia	0	0	2	2	2	4	0	0	7	22
Ceylon	—	—	49	37	—	—	207	201	—	386
China	—	—	223	1,172	57	86	977	928	165	1,314
Java and Madura	—	—	—	—	—	—	481	494	—	1,087
Indo-China	—	—	—	—	—	—	157	137	—	337
Syria and Lebanon	—	—	—	—	22	51	35	320	77	888
Egypt	—	—	—	—	0	0	35	46	0	99
Union of South Afr.	—	—	—	—	0	0	7	4	2	9
New Zealand	—	—	—	—	0	0	73	66	2	209
Totals	3,857	4,373	1,493	1,637	29,692	29,747	10,618	12,436	57,737	24,023
Barley. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Bulgaria	0	11	0	0	0	280	0	0	522	0
Spain	0	0	0	0	0	42	0	0	44	0
Hungary	0	57	0	0	75	893	22	0	1,093	0
Poland	871	320	0	0	4,998	2,136	0	0	3,538	0
Romania	99	467	0	0	3,349	11,019	0	4	14,654	4
Czechoslovakia	60	37	0	0	866	789	0	2	1,116	2
Yugoslavia	20	15	0	0	439	143	0	0	176	0
U. S. S. R.	—	811	—	—	3,086	10,307	—	—	12,500	—
Canada	190	31	0	0	5,168	355	0	0	820	0
United States	300	247	441	0	1,601	1,464	3,441	11	2,531	152
Argentina	2,626	1,821	—	—	4,001	3,058	—	—	11,605	—
Chile	—	—	—	—	736	586	0	0	2,006	0
India	18	0	0	18	273	2	0	60	2	95
Algeria	—	—	—	—	946	511	487	403	1,144	496
Egypt	—	—	—	—	0	119	4	0	139	0
French Morocco	567	174	0	0	3,975	1,759	0	0	2,628	0
Australia	359	174	0	0	787	633	0	0	1,407	0
<i>Importing Countries:</i>										
Germany	0	0	688	767	0	0	7,990	3,547	2	7,648
Austria	0	0	139	143	0	0	1,021	985	0	2,588
Belgium	40	4	617	595	298	355	4,863	5,523	655	8,962
Denmark	108	55	84	51	1,239	470	635	765	977	1,314
Irish Free State	0	0	0	0	0	4	11	2	68	11
France	0	0	489	278	2	0	2,372	2,692	0	3,915
Gr. Brit. and N. Irel.	0	0	787	1,940	4	7	8,931	12,921	26	20,322
Greece	0	0	0	0	0	0	7	2	0	4
Italy	0	0	185	79	0	0	866	454	0	1,124
Norway	0	0	11	40	0	0	112	238	0	293
Netherlands	11	4	390	414	161	4	3,034	6,903	26	11,545
Switzerland	0	0	245	234	0	0	1,669	1,191	0	2,412
Syria and Lebanon	—	—	—	—	73	49	35	179	79	216
Tunisia	—	—	—	—	18	719	219	134	84	602
Totals	5,269	4,228	4,076	4,559	32,099	35,038	36,210	36,082	57,785	61,904

COUNTRIES	JANUARY				SIX MONTHS (August 1-Jan. 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1935	1934	1935	1934	1934-35	1933-34	1934-35	1933-34	1933-34	1933-34
Oats. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Irish Free State	0	2	0	0	0	20	0	0	20	0
Hungary	0	79	0	0	0	639	0	0	761	0
Lithuania	31	0	0	0	33	0	0	0	304	0
Poland	121	7	0	0	437	64	0	0	504	0
Romania	0	9	0	0	0	505	0	0	741	0
Czechoslovakia	0	35	0	0	225	531	0	0	112	0
Yugoslavia	2	4	0	0	2	714	0	0	2,070	2
Canada	384	68	0	0	2,844	97	2,123	18	123	71
United States	4	7	527	2	20	0	0	0	7,053	—
Argentina	2,227	761	—	—	8,722	3,230	—	—	1,530	0
Chile	—	—	—	—	1) 454	1) 439	1) 0	1) 0	86	22
Tunisia	—	—	—	—	2) 262	2) 13	2) 2	2) 0	33	2
Australia	53	4	0	0	110	15	0	0	—	—
<i>Importing Countries:</i>										
Germany	0	165	527	7	11	1,631	1,528	73	1,931	97
Austria	0	0	2	0	0	0	71	97	0	450
Belgium	0	0	4	7	0	0	44	37	0	390
Denmark	73	7	90	15	551	20	454	203	26	373
Estonia	7	0	0	0	7	0	0	0	0	0
Finland	0	2	0	68	0	7	11	324	9	549
France	2	0	13	4	7	2	214	157	179	238
Gr. Brit. and N. Irel.	2	0	245	664	7	9	1,389	3,122	20	4,894
Italy	0	0	511	130	0	0	2,476	994	0	2,811
Latvia	—	—	—	—	1) 0	1) 0	1) 0	1) 0	0	2
Norway	0	0	0	0	0	0	0	0	4	2
Netherlands	2	2	42	46	2	7	346	573	20	1,142
Sweden	9	2	0	88	29	2	13	675	9	915
Switzerland	0	0	357	304	0	0	2,452	2,024	0	4,780
Algeria	—	—	—	—	1) 79	1) 40	1) 66	1) 93	64	282
Totals	2,917	1,154	2,318	1,335	13,802	8,042	11,191	8,390	15,602	17,022
Maize. — Thousand centals (1 cental = 100 lb.).										
COUNTRIES	JANUARY				THREE MONTHS (November 1-Jan. 31)				TWELVE MONTHS (Nov. 1-Oct. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1935	1934	1935	1934	1934-35	1933-34	1934-35	1933-34	1933-34	1933-34
<i>Exporting Countries:</i>										
Bulgaria	46	66	0	0	375	183	0	0	2,564	0
Hungary	7	161	0	0	44	642	0	0	1,056	0
Romania	675	624	0	0	3,519	1,956	0	0	10,115	0
Yugoslavia	871	789	0	0	5,560	2,443	0	0	11,810	2
United States	18	71	1,056	11	181	961	1,975	35	2,401	763
Argentina	10,633	13,863	—	—	27,677	38,482	—	—	127,357	—
Java and Madura	165	218	—	—	209	470	—	—	924	—
Indo-China	—	—	—	—	1) 3,296	1) 1,239	—	—	8,439	—
Syria and Lebanon	—	—	—	—	1) 0	1) 0	0	4	0	66
Egypt	—	—	—	—	1) 0	1) 2	1) 7	1) 2	2	20
Union of South Afr.	959	0	—	—	2,282	0	0	163	3,693	432
<i>Importing Countries:</i>										
Germany	0	0	913	335	0	0	2,941	1,246	0	7,452
Austria	0	0	895	886	0	2	3,181	2,685	2	10,448
Belgium	40	154	1,283	1,638	262	243	3,660	4,268	822	16,824
Denmark	0	0	370	421	0	0	1,246	1,093	0	4,586
Spain	0	0	119	13	0	0	276	721	0	1,307
Irish Free State	0	0	527	785	0	0	1,470	1,166	0	6,543
Finland	0	0	46	119	0	0	99	401	0	1,312
France	0	0	1,753	1,614	0	4	5,042	4,542	22	13,607
Gr. Brit. and N. Irel.	185	130	5,681	6,440	549	351	17,959	15,942	2,116	66,597
Greece	0	0	35	2	0	97	—	—	0	37
Italy	0	0	97	121	2	0	346	635	2	3,874
Norway	0	0	190	159	0	0	664	820	0	3,084
Netherlands	0	4	2,165	2,381	0	4	5,803	6,045	13	22,011
Poland	0	0	0	9	0	0	0	20	0	60
Portugal	—	—	35	75	—	—	256	322	—	1,669
Sweden	0	0	42	470	0	0	150	1,336	0	3,106
Switzerland	0	0	194	161	0	0	534	397	0	1,792
Czechoslovakia	0	0	273	163	0	0	620	950	0	5,150
Canada	0	0	284	265	0	0	1,631	1,041	2	4,090
Japan	—	—	—	—	—	—	1) 0	1) 2	—	2
Tunisia	—	—	—	—	2) 0	2) 0	2) 15	2) 0	4	101
Totals	13,599	16,080	15,958	16,068	43,956	46,982	47,972	43,851	171,344	174,935

1) 2) See notes page 237.

COUNTRIES	JANUARY				TWELVE MONTHS (January 1-Dec. 31)				TWELVE MONTHS (January 1-Dec. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1935	1934	1935	1934	1934	1933	1934	1933	1933	1933
Rice. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Spain	11	9	0	0	1,010	190	0	0	—	—
Italy	419	417	0	2	3,598	4,308	44	115	—	—
United States	75	106	95	15	917	1,365	558	302	—	—
Brazil	—	—	—	—	734	516	—	—	—	—
India	2,169	1,746	165	470	31,244	41,295	8,858	772	—	—
Indo-China	—	—	—	—	28,296	27,364	—	—	—	—
Siam	3,391	2,732	—	—	42,986	35,265	—	—	—	—
Egypt	—	—	—	—	1,508	2,127	9	9	—	—
<i>Importing Countries:</i>										
Germany	35	22	368	392	745	816	6,341	6,775	—	—
Austria	0	0	55	57	0	0	633	608	—	—
Belgium	4	11	62	123	97	84	1,446	1,276	—	—
Denmark	0	0	7	7	0	0	137	176	—	—
Estonia	—	—	0	2	—	—	15	11	—	—
Irish Free State	0	0	2	4	0	0	57	53	—	—
France	35	99	1,102	586	661	772	14,171	12,544	—	—
Gr. Brit. and N. Irel.	15	13	73	141	174	168	2,862	2,352	—	—
Greece	—	—	46	49	—	—	313	450	—	—
Hungary	0	0	4	60	0	0	448	483	—	—
Latvia	—	—	—	—	0	0	11	29	—	—
Lithuania	—	—	0	2	0	0	15	18	—	—
Norway	0	0	4	4	0	0	106	77	—	—
Netherlands	214	64	75	51	2,013	1,281	3,629	3,483	—	—
Poland	13	4	4	0	157	203	974	1,415	—	—
Portugal	—	—	9	62	—	—	575	723	—	—
Sweden	—	—	9	0	—	—	223	104	—	—
Switzerland	0	0	33	22	0	0	397	575	—	—
Czechoslovakia	0	0	99	35	0	0	1,497	1,292	—	—
Yugoslavia	0	0	31	42	0	0	439	536	—	—
Canada	0	0	15	29	4	18	732	620	—	—
Chile	—	—	—	—	—	—	340	174	—	—
Ceylon	0	0	1,105	1,032	4	4	10,977	10,119	—	—
China	11	24	2,736	705	150	139	17,000	28,559	—	—
Java and Madura	2	7	—	—	132	168	1,356	2,346	—	—
Japan	—	—	—	—	1,457	362	152	3,142	—	—
Syria and Lebanon	—	—	—	—	0	0	428	397	—	—
Algeria	—	—	—	—	9	18	355	220	—	—
Tunisia	—	—	—	—	2) 0	2) 0	55	24	—	—
Union of South Afr.	—	—	—	—	0	0	1,184	1,032	—	—
Australia	15	9	4	20	244	174	49	51	—	—
New Zealand	—	—	—	—	2) 0	2) 0	71	68	—	—
Totals	6,409	5,263	6,103	3,916	116,140	116,637	76,457	80,930	—	—
Linseed. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Lithuania	22	33	0	0	141	132	0	0	—	—
Argentina	5,745	4,469	—	—	30,300	30,695	—	—	—	—
India	101	412	0	0	6,175	7,782	0	0	—	—
Tunisia	—	—	—	—	2) 0	2) 0	2) 0	0	—	—
<i>Importing Countries:</i>										
Germany	0	0	348	593	2	29	6,986	7,899	—	—
Belgium	11	4	126	216	68	68	1,790	2,754	—	—
Denmark	—	—	18	15	—	—	359	428	—	—
Spain	—	—	22	18	—	—	366	359	—	—
Estonia	0	0	0	0	15	0	4	29	—	—
Finland	0	0	4	7	0	0	104	88	—	—
France	0	0	324	412	7	7	5,243	5,807	—	—
Gr. Brit. and N. Irel.	0	0	496	481	15	4	4,123	5,569	—	—
Greece	0	0	2	13	0	0	112	134	—	—
Hungary	0	0	0	0	13	7	0	31	—	—
Italy	2	0	49	82	0	0	1,422	1,653	—	—
Latvia	—	—	—	—	79	75	86	106	—	—
Norway	—	—	13	33	0	0	337	412	—	—
Netherlands	11	4	487	348	77	44	7,108	6,512	—	—
Poland	0	0	0	0	0	2	170	287	—	—
Sweden	—	—	22	15	—	—	849	776	—	—
Czechoslovakia	0	0	4	11	0	2	556	423	—	—
Yugoslavia	0	0	4	18	0	0	139	90	—	—
Canada	2	0	0	0	4	344	443	84	—	—
United States	—	—	432	578	—	—	7,934	7,743	—	—
Japan	—	—	—	—	2	0	434	472	—	—
Australia	0	0	20	9	0	0	560	487	—	—
Totals	5,894	4,992	2,371	2,849	36,898	39,193	39,127	42,143	—	—

2) See notes page 237.

COUNTRIES	JANUARY				TWELVE MONTHS (January 1- Dec. 31)				TWELVE MONTHS (January 1-Dec. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1935	1934	1935	1934	1934	1933	1934	1933	1933	1933
Butter. — (Thousand lb.).										
<i>Exporting Countries:</i>										
Austria	170	688	0	2	7,053	2,606	137	161	—	—
Denmark	23,567	25,494	7	18	330,311	332,269	20	553	—	—
Estonia	1,091	946	0	0	22,306	20,336	0	4	—	—
Irish Free State	699	503	2	44	56,886	45,232	84	22	—	—
Finland	1,889	2,471	0	9	24,467	26,202	13	1,407	—	—
Hungary	527	1,010	0	0	8,790	8,038	0	0	—	—
Latvia	—	—	—	—	34,615	34,494	0	0	—	—
Lithuania	904	622	0	0	21,321	21,120	0	0	—	—
Norway	174	212	0	0	547	904	2	141	—	—
Netherlands	5,068	3,865	190	26	81,320	62,552	1,173	1,448	—	—
Poland	163	390	0	0	9,782	3,547	9	24	—	—
Sweden	3,818	4,138	0	0	51,152	37,759	4	73	—	—
U. S. S. R.	—	—	—	—	26,707	18,422	—	—	—	—
Argentina	2,344	3,743	—	—	18,547	30,664	—	—	—	—
India	18	18	77	42	209	223	642	527	—	—
Syria and Lebanon	—	—	—	—	293	192	809	1,755	—	—
Australia	37,922	32,697	0	0	246,784	211,532	2	2	—	—
New Zealand	45,898	29,546	—	—	292,834	295,143	—	—	—	—
<i>Importing Countries:</i>										
Germany	0	2	15,924	7,436	9	20	136,165	130,391	—	—
Belgium	7	7	3,173	3,395	108	725	20,629	27,408	—	—
Spain	2	0	22	2	15	22	143	15	—	—
France	556	474	79	2,418	7,297	6,828	9,603	20,307	—	—
Gr. Brit. and N. Irel.	1,340	1,019	87,134	100,793	12,635	10,840	1,086,713	989,145	—	—
Greece	—	—	86	29	—	—	690	604	—	—
Italy	9	15	22	1,770	276	833	3,799	4,698	—	—
Switzerland	0	0	11	42	0	2	653	1,146	—	—
Czechoslovakia	0	22	97	53	22	110	2,229	1,495	—	—
Canada	35	31	7	13	428	4,438	2,873	1,378	—	—
United States	68	152	538	53	1,321	1,107	1,107	1,021	—	—
Ceylon	—	—	115	66	—	—	681	642	—	—
Java and Madura	—	—	—	—	—	—	10,313	10,044	—	—
Japan	—	—	—	—	—	—	64	236	—	—
Algeria	—	—	—	—	7	18	4,791	4,120	—	—
Egypt	—	—	—	—	82	254	789	721	—	—
Tunisia	—	—	—	—	18	4	1,975	1,508	—	—
Totals	126,269	108,066	107,486	116,211	1,255,942	1,176,597	1,286,132	1,200,996	—	—
Cheese. — (Thousand lb.).										
<i>Exporting Countries:</i>										
Bulgaria	193	104	0	0	2,652	2,579	0	0	—	—
Denmark	1,058	1,008	2	4	13,891	22,220	73	77	—	—
Finland	734	375	0	2	8,523	9,207	40	33	—	—
Italy	3,948	3,148	390	670	55,283	52,779	10,190	9,952	—	—
Lithuania	4	101	0	0	2,200	1,662	2	4	—	—
Norway	287	256	20	9	4,418	3,818	214	192	—	—
Netherlands	12,183	9,758	66	68	134,892	140,902	1,455	809	—	—
Poland	472	117	26	33	3,926	540	531	421	—	—
Switzerland	3,051	2,617	174	368	39,143	45,347	5,353	3,779	—	—
Czechoslovakia	82	55	163	165	1,995	2,824	2,628	2,917	—	—
Yugoslavia	157	112	4	2	4,045	3,228	57	71	—	—
Canada	287	1,235	68	51	61,167	74,168	946	968	—	—
Australia	298	1,294	7	4	12,467	10,911	77	57	—	—
New Zealand	25,521	28,091	—	—	222,266	222,313	0	4	—	—
<i>Importing Countries:</i>										
Germany	117	154	6,493	7,346	2,114	3,876	74,488	90,923	—	—
Austria	505	212	90	68	3,860	4,736	1,720	2,094	—	—
Belgium	20	35	4,090	3,874	353	348	47,818	48,418	—	—
Spain	9	9	104	128	123	168	2,482	2,489	—	—
Irish Free State	33	15	4	4	514	68	64	346	—	—
France	2,231	2,332	2,619	1,797	25,973	25,034	35,173	46,105	—	—
Gr. Brit. and N. Irel.	485	414	30,311	34,099	5,968	6,149	334,718	340,417	—	—
Greece	0	174	88	7	1,144	1,444	295	732	—	—
Hungary	4	13	0	0	176	55	0	11	—	—
Portugal	—	—	18	7	—	—	525	529	—	—
Sweden	—	—	84	64	—	—	1,248	1,016	—	—
United States	112	119	3,574	2,822	1,512	1,420	47,532	48,398	—	—
Java and Madura	0	0	132	99	2	2	1,135	1,069	—	—
Syria and Lebanon	—	—	—	—	—	—	1,656	1,728	—	—
Algeria	—	—	—	—	534	46	1,221	1,640	—	—
Egypt	—	—	—	—	117	121	11,288	10,776	—	—
Tunisia	—	—	—	—	126	126	6,537	6,173	—	—
Totals	51,781	51,748	48,527	51,691	609,463	636,155	592,107	624,580	—	—

*) See notes page 237.

COUNTRIES	JANUARY				SIX MONTHS (August 1-Jan. 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1935	1934	1935	1934	1934-35	1933-34	1934-35	1933-34	1933-34	1933-34
Cotton. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
United States	2,511	4,026	37	64	15,648	26,599	282	346	40,971	747
Argentina	9	0	—	—	317	161	—	—	450	—
Brazil	—	—	—	—	1,726	238	—	—	1,305	—
India	1,420	972	115	66	4,804	3,426	507	386	12,791	972
Egypt	—	—	—	—	3,653	4,081	—	—	8,927	—
<i>Importing Countries:</i>										
Germany	55	88	534	814	527	677	2,716	4,817	1,235	9,539
Austria	0	0	53	55	4	0	342	351	2	666
Belgium	75	40	168	143	353	265	1,041	886	553	1,768
Denmark	—	—	15	13	—	—	104	95	—	190
Spain	13	2	128	194	26	11	882	1,071	35	2,698
Estonia	0	0	11	7	0	0	60	44	0	88
Finland	0	0	33	26	2	0	190	137	2	249
France	46	40	743	743	351	196	2,520	4,328	423	7,101
Gr. Brit. and N. Irel.	106	68	1,142	1,354	388	311	6,113	7,915	606	14,266
Greece	0	0	7	15	0	0	60	71	0	163
Hungary	0	0	44	51	0	0	258	260	0	509
Italy	0	0	390	456	2	4	1,770	2,425	7	4,716
Latvia	—	—	—	—	—	—	—	—	—	—
Norway	—	—	—	—	—	—	—	—	—	—
Netherlands	0	0	71	106	2	7	439	496	7	988
Poland	2	0	106	141	7	4	732	794	4	1,519
Portugal	—	—	44	46	—	—	231	245	—	498
Sweden	—	—	88	99	—	—	364	324	—	661
Switzerland	0	0	49	53	0	0	287	304	0	597
Czechoslovakia	4	9	104	157	44	53	833	902	97	1,845
Yugoslavia	0	0	20	33	0	0	165	123	0	289
Canada	—	—	110	86	—	—	741	680	—	1,506
China	49	62	280	600	137	302	791	1,230	847	2,835
Japan	—	—	—	—	247	112	6,570	5,803	384	17,163
Algeria	—	—	—	—	—	—	—	—	—	—
Totals	4,290	5,307	4,098	5,324	28,242	36,447	28,077	34,217	68,648	71,745

Wool. = (Thousand lb.).

COUNTRIES	JANUARY				SIX MONTHS (August 1-Jan. 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1935	1934	1935	1934	1934-35	1933-34	1934-35	1933-34	1933-34	1933-34
Wool. = (Thousand lb.).										
<i>Exporting Countries:</i>										
Irish Free State	959	2,059	90	40	5,176	10,399	417	317	16,810	697
Hungary	93	9	527	218	1,283	866	1,620	1,091	6,270	2,286
Argentina	33,365	52,413	—	—	84,995	137,527	—	—	260,459	—
Chile	3,366	2,385	—	—	10,340	7,617	—	—	15,959	—
India	—	—	—	—	895	3,170	75	0	27,174	4
Syria and Lebanon	5,448	7,934	558	388	18,669	29,445	1,900	1,334	54,798	4,072
Algeria	—	—	—	—	3,272	2,207	68	302	4,799	324
Egypt	—	—	—	—	2,441	2,718	849	739	9,270	2,350
Un. of S. Africa	23,801	27,955	—	—	463	780	9	11	2,721	57
Australia	679	569	—	—	85,209	133,422	0	0	228,426	0
New Zealand	2,401	68,714	553	593	2,456	2,820	333	531	6,228	1,519
— (a)	2,401	68,714	553	593	332,399	489,706	1,338	2,348	703,392	7,035
— (b)	3,874	5,849	24	84	27,199	33,782	88	205	65,852	342
— (c)	27,273	34,167	—	—	38,627	64,062	2	0	228,155	0
— (d)	1,938	3,587	—	—	9,414	11,998	2	0	47,120	15
<i>Importing Countries:</i>										
Germany	115	119	21,967	29,494	4,497	902	62,537	93,928	2,899	285,918
Austria	278	353	8,003	8,669	1,252	3,913	18,916	27,816	5,935	62,340
Belgium	82	20	1,984	1,984	888	115	6,241	9,678	688	18,045
Denmark	9,969	9,751	25,047	24,474	34,507	48,500	72,978	85,121	96,175	173,077
Spain	1,786	3,373	331	675	1,448	14,500	2,384	3,309	24,399	5,463
Finland	68	22	304	340	220	115	2,284	2,344	225	5,031
France	194	333	355	141	1,168	2,035	1,971	1,953	4,367	7,132
Gr. Brit. and N. Irel.	44	2	397	467	143	11	2,167	2,332	42	5,615
Greece	3,353	6,552	49,265	56,095	18,627	26,930	112,350	157,137	51,035	374,902
Italy	32,739	28,881	94,385	127,983	101,711	139,293	272,413	354,837	356,872	843,540
Norway	29	351	694	333	300	653	2,599	1,378	1,369	4,612
Netherlands	77	62	6,019	7,753	410	293	13,270	41,941	1,243	142,633
Poland	132	551	805	1,636	963	1,786	4,425	8,911	4,092	21,129
Sweden	110	152	207	225	646	725	897	1,005	2,332	2,332
Switzerland	273	959	686	1,276	2,341	2,848	2,465	4,039	4,482	9,081
Czechoslovakia	194	209	549	769	895	814	2,937	3,761	1,398	6,570
Yugoslavia	7	26	3,078	4,910	71	595	9,092	15,646	745	38,111
Canada	—	—	1,545	2,994	—	—	7,471	9,442	—	22,882
United States	20	15	2,044	2,407	95	146	8,358	8,190	247	20,130
Japan	88	174	2,255	4,052	935	1,071	10,562	14,092	2,507	35,285
Tunisia	0	22	326	650	690	126	2,432	2,315	320	6,260
— (a)	849	379	1,153	1,715	3,287	6,713	3,311	7,436	8,155	18,495
— (b)	223	181	8,583	9,636	604	580	35,038	82,744	4,405	156,050
— (c)	—	—	—	—	71	88	54,351	75,187	381	202,370
— (d)	—	—	—	—	55	130	77	906	—	—
Totals	153,827	258,128	231,734	304,001	803,949	1,183,661	717,391	1,021,590	2,251,924	2,486,061

a) = Wool, greasy. b) = Wool scoured. — 1) 2) See notes page 237.

COUNTRIES	JANUARY		SEVEN MONTHS (July 1-Jan. 31)		TWELVE MONTHS (July 1-June 30)	COUNTRIES	JANUARY		SEVEN MONTHS (July 1-Jan. 31)		TWELVE MONTHS (July 1-June 30)
	1935	1934	1934-35	1933-34	1933-34		1935	1934	1934-35	1933-34	1933-34
Coffee. — (Thousand lb.).						Tea. — (Thousand lb.).					
EXPORTS.						EXPORTS.					
<i>Exporting Countries:</i>						<i>Exporting Countries:</i>					
Brazil . . . . .	...	...	862,584 ¹⁾	1,094,429	2,097,337	Ceylon	15,768	15,426	114,409	105,395	210,494
India	736	1,283	3,135	5,681	20,565	China	6,914	9,623	61,527	64,783	104,153
Java and Madura . .	3,164	4,837	44,681	40,118	64,360	India	27,221	24,143	260,446	253,958	311,611
						Java and Madura . .	9,326	9,881	64,995	59,386	107,044
						Japan . . . . .	...	...	21,387 ¹⁾	21,339	31,720
<i>Importing Countries:</i>						<i>Importing Countries:</i>					
Germany	7	13	66	161	234	Belgium	0	0	7	4	9
Belgium	7	33	84	134	284	Irish Free State . .	4	2	251	20	159
France	0	0	4	55	71	France	2	2	18	20	40
Gr. Britain and N. Ireland	2,220	2,341	9,520	17,368	33,217	Gr. Britain and N. Irel.	5,434	4,694	39,439	50,241	78,736
Netherlands	1,237	1,971	7,529	9,178	18,470	Netherlands	13	13	73	79	146
Portugal	229	220	1,550	1,735	3,278	United States	29	75	467	313	1,706
Switzerland	33	22	496	212	351	Syria and Lebanon . .	...	...	9 ¹⁾	0	2
Canada	18	4	49	31	57	Algeria . . . . .	...	...	66 ¹⁾	26	57
United States	1,517	3,369	8,699	16,555	25,212	Union of S. Africa . .	...	...	20 ¹⁾	9	18
Ceylon	0	0	2	2	7	Australia	62	66	487	648	928
Syria and Lebanon . .	...	...	0 ¹⁾	0	2	New Zealand . . . . .	...	...	40 ¹⁾	33	106
Australia	0	...	31	22	40						
Totals	—	—	—	—	2,263,485	Totals	64,773	63,925	563,641	556,254	846,929
IMPORTS.						IMPORTS.					
<i>Importing Countries:</i>						<i>Importing Countries:</i>					
Germany	20,216	30,955	191,247	177,091	307,398	Germany	631	836	6,471	6,424	10,415
Austria	948	419	7,652	6,455	11,244	Austria	84	64	553	452	728
Belgium	8,565	10,617	58,738	65,323	109,656	Belgium	49	62	293	313	534
Bulgaria	101	95	677	564	1,074	Denmark	115	108	642	800	1,230
Denmark	4,345	4,403	33,645	34,236	57,814	Spain	13	29	150	183	359
Spain	4,883	3,459	30,790	35,819	67,149	Estonia	9	4	42	46	66
Estonia	13	7	90	95	152	Irish Free State . . .	1,437	2,114	13,858	14,753	23,464
Irish Free State . . .	62	62	214	227	545	Finland	24	37	137	154	251
Finland	3,984	4,299	22,137	21,989	37,038	France	251	247	1,129	2,668	3,968
France	37,708	34,736	228,014	245,814	409,056	Gr. Britain and N. Ireland	44,800	47,089	357,875	323,071	470,574
Gr. Britain and N. Ireland	7,178	6,418	18,680	28,713	77,424	Greece	79	40	251	271	390
Greece	1,206	1,027	7,286	7,568	12,641	Hungary	40	26	384	276	381
Hungary	546	417	3,009	2,491	4,314	Italy	22	20	163	152	280
Italy	7,910	8,415	50,524	51,061	86,889	Latvia . . . . .	...	...	33 ¹⁾	26	51
Latvia . . . . .	...	...	40 ¹⁾	82	278	Lithuania	7	11	46	51	84
Lithuania	31	44	229	214	359	Norway	26	44	196	218	381
Norway	2,167	3,415	17,337	20,082	37,368	Netherlands	2,487	2,456	18,543	18,164	25,942
Netherlands	4,616	13,230	37,924	90,764	137,461	Poland	291	245	2,044	2,295	3,719
Poland	1,166	1,354	8,248	10,227	16,852	Portugal	20	62	220	317	478
Portugal	981	747	9,681	12,035	19,759	Sweden	53	68	507	498	884
Sweden	8,027	10,108	55,233	54,031	96,759	Switzerland	97	119	888	924	1,576
Switzerland	2,734	2,899	16,402	17,860	32,058	Czechoslovakia . . .	95	75	747	589	902
Czechoslovakia . . .	1,958	2,363	13,389	14,711	23,177	Yugoslavia	37	24	311	262	388
Yugoslavia	1,162	1,420	7,635	8,905	13,823	Canada	3,106	3,375	16,960	19,956	41,246
Canada	2,430	2,818	16,239	18,027	36,110	United States	7,386	6,938	51,099	61,935	87,691
United States	139,906	145,140	835,004	914,436	1,598,178	Chile . . . . .	...	...	1,872 ¹⁾	783	2,156
Chile . . . . .	...	...	2,820 ¹⁾	2,008	4,394	Syria and Lebanon . .	...	...	313 ¹⁾	170	271
Ceylon	152	55	1,788	1,971	3,150	Algeria . . . . .	...	...	2,136 ¹⁾	2,125	3,863
Japan . . . . .	...	...	3,276 ¹⁾	2,959	6,124	Egypt . . . . .	...	...	9,015 ¹⁾	7,915	15,166
Syria and Lebanon . .	...	...	1,067 ¹⁾	1,349	2,368	Tunisia . . . . .	...	...	1,466 ¹⁾	758	1,781
Algeria . . . . .	...	...	15,095 ¹⁾	15,402	29,518	Union of S. Africa . .	...	...	6,649 ¹⁾	6,861	11,636
Egypt . . . . .	...	...	7,502 ¹⁾	10,518	17,604	Australia	4,184	4,394	27,783	28,790	46,260
Tunisia . . . . .	...	...	1,497 ¹⁾	1,360	3,344	New Zealand . . . . .	...	...	3,611 ¹⁾	4,949	11,407
Un. of S. Africa . . .	...	...	13,334 ¹⁾	15,728	29,312						
Australia	227	1,254	1,276	3,203	5,057						
New Zealand . . . . .	...	...	112 ¹⁾	220	492						
<i>Exporting Countries:</i>						<i>Exporting Countries:</i>					
India	0	0	0	0	2	China	139	35	454	406	677
						India	284	170	2,291	3,602	4,414
						Java and Madura . . .	...	...	1,085 ¹⁾	1,120	2,019
Totals	263,022	290,176	1,717,831	1,889,144	3,288,216	Totals	65,766	68,692	530,197	512,257	775,632

1) 2) See notes page 237.

COUNTRIES	JANUARY		FOUR MONTHS (Oct. 1-Jan. 31)		TWELVE MONTHS (Oct. 1-Sept. 30)	COUNTRIES	JANUARY		SIX MONTHS (Aug. 1-Jan. 31)		TWELVE MONTHS (August 1-July 31)
	1935	1934	1934-35	1933-34	1933-34		1935	1934	1934-35	1933-34	1933-34
Cacao. — (Thousand lb.).						Total Wheat and Flour *)					
EXPORTS.						(Thousand cents).					
<i>Exporting Countries:</i>						<i>a) NET EXPORTS.</i>					
Granada . . . . .	...	...	1,865	1,476	9,612	Germany	4)	474	4)	4,550	2,716
Dominican Republ.	3,761	4,337	10,364	10,293	49,818	Bulgaria	0	71	0	1,618	2,366
Brazil . . . . .	...	...	96,759	49,906	211,552	Spain	0	2	0	26	42
Ecuador . . . . .	...	...	4,974	2,676	37,278	Estonia	75	0	75	0	0
Trinidad . . . . .	...	...	5,404	7,755	29,057	France	1,784	4)	3,212	4)	4)
Venezuela . . . . .	...	...	3,968	3,730	25,223	Hungary	494	1,197	3,713	10,382	17,452
Ceylon	858	1,338	3,040	3,232	8,841	Latvia . . . . .	...	...	1)	53	0
Java and Madura	185	406	1,660	1,552	4,195	Lithuania	51	2	108	24	29
French Cameroon	8,534	7,707	22,520	20,512	48,427	Poland	90	33	564	4)	1,466
Ivory Coast	23,265	11,526	45,717	21,065	78,681	Romania	0	0	4)	137	139
Gold Coast	97,363	91,111	246,314	230,007	494,792	Yugoslavia	40	11	1,900	254	626
Nigeria and British Cameroon	34,862	23,664	86,479	59,779	159,165	U. S. S. R.	6)	1,636	6)	1,102	6)
Saint Thomas and Prince Is.	2,527	1,614	13,962	11,171	19,795	Canada	4,118	5,419	63,474	67,261	115,972
French Togoland . . . . .	...	...	1,612	2,800	12,932	United States	4)	2,147	4)	6,429	15,346
<i>Importing Countries:</i>						Argentina	10,554	9,125	54,609	32,688	87,308
Germany	0	0	88	141	205	Chile . . . . .	...	...	1)	489	4)
Belgium	2	0	172	0	18	India	4)	33	315	117	223
France	0	0	0	0	0	Japan . . . . .	...	...	4)	150	4)
Gr. Brit. and N. Irel.	1,956	481	8,591	2,496	13,492	Syria and Lebanon . . . . .	...	...	1)	4,026	1)
Netherlands	578	580	1,431	2,053	7,368	Algeria . . . . .	...	...	1)	2,055	3,287
United States	659	642	3,360	3,662	10,823	French Morocco	276	104	2,055	3,164	5,135
Australia	146	0	159	0	322	Tunisia . . . . .	...	...	2)	911	82
Totals . . .	174,696	143,406	558,439	435,306	1,221,596	Australia	7,341	5,708	32,346	25,353	50,651
						New Zealand . . . . .	...	...	4)	37	4)
						Totals . . .	24,823	25,962	169,102	173,084	325,660
IMPORTS.						<i>b) NET IMPORTS.</i>					
<i>Importing Countries:</i>						Germany	538	5)	4,193	5)	5)
Germany	13,276	14,092	64,759	60,455	218,563	Austria	379	373	2,454	2,407	6,188
Austria	1,135	780	4,616	3,316	10,282	Belgium	1,235	1,949	13,409	12,674	25,093
Belgium	1,795	2,751	5,761	9,804	24,403	Denmark	1,636	428	6,543	4,378	7,516
Bulgaria	37	64	231	813	798	Irish Free State	126	578	4,905	5,646	11,735
Denmark	494	884	1,914	2,643	8,468	Finland	165	187	1,182	1,252	2,626
Spain	992	1,003	4,416	3,977	29,762	France	5)	961	5)	5,758	10,304
Estonia	42	53	227	302	644	Gr. Brit. and N. Irel.	6,676	7,694	57,719	65,332	130,547
Irish Free State	46	441	692	1,135	4,449	Greece	593	509	3,183	3,655	6,303
Finland	26	33	90	60	157	Italy	699	331	1,814	1,459	5,194
France	6,953	7,218	27,959	34,189	94,376	Norway	472	377	2,685	2,553	4,996
Gr. Brit. and N. Irel.	44,500	28,369	70,861	60,133	176,467	Netherlands	1,019	216	6,380	8,356	13,510
Greece	159	423	968	1,365	2,868	Poland	5)	5)	5)	209	5)
Hungary	1,276	313	3,031	1,887	6,477	Portugal	0	44	152	251	575
Italy	2,112	1,426	8,777	7,253	18,470	Romania	5)	5)	2	5)	5)
Latvia . . . . .	...	...	328	505	1,585	Sweden	86	88	368	608	721
Lithuania	33	26	225	154	545	Switzerland	6)	747	6)	5,456	6)
Norway	558	381	2,231	1,263	5,564	Czechoslovakia	123	2	181	97	104
Netherlands	16,764	13,993	44,492	41,099	124,522	Total Europe	14,494	14,500	110,626	120,502	235,963
Poland	1,087	946	5,483	5,044	14,253	United States	441	5)	1,307	5)	5)
Portugal	75	24	355	412	1,107	Chile . . . . .	...	...	5)	1)	227
Sweden	1,166	1,098	3,569	3,477	9,749	Ceylon	64	51	280	271	518
Switzerland	1,001	1,237	2,806	3,377	16,455	China	1,744	2,727	3,190	5,207	12,547
Czechoslovakia	1,933	1,678	7,480	7,734	23,488	India	66	5)	5)	5)	5)
Yugoslavia	139	157	502	441	1,537	Indo-China . . . . .	...	...	1)	209	183
Canada	1,530	1,693	8,287	10,245	22,377	Japan . . . . .	...	...	1)	335	5)
United States	52,369	42,887	152,721	114,187	412,610	Java and Madura . . . . .	...	...	1)	642	659
Japan . . . . .	...	...	1)	1,124	827	Syria and Lebanon . . . . .	...	...	5)	1)	134
Australia	1,418	2,956	2,037	4,420	16,239	Egypt . . . . .	...	...	1)	157	57
New Zealand . . . . .	...	...	2)	161	2,487	Tunisia . . . . .	...	...	5)	5)	20
Totals . . .	150,936	124,926	426,203	380,182	1,251,039	Union of S. Africa . . . . .	...	...	1)	522	2)
						New Zealand . . . . .	...	...	2)	101	5)
						Totals . . .	16,809	17,278	117,369	127,811	254,816

*) Flour reduced to grain on the basis of the coefficient: 1000 cents of flour = 1,333,333 cents of grain.

a) Excess of exports over imports. — b) Excess of imports over exports.

1) Data up to 31 December. — 2) Data up to 30 November. — 3) Data up to 30 June. — 4) See Net Imports. — 5) See Net Exports. — 6) Wheat only. — 7) Approximate and unofficial figures.

STOCKS OF CEREALS

Commercial cereals in store in Canada and the United States.

SPECIFICATION	Friday or Saturday nearest 1st of month				
	March 1935	February 1935	January 1935	March 1934	March 1933
	1,000 centals				
WHEAT:					
Canadian in Canada	131,532	133,279	138,134	132,639	134,121
U. S. in Canada	629	629	629	1,341	3,932
U. S. in the United States	37,051	45,164	54,562	64,340	88,279
Canad. in the United States	12,891	14,978	16,538	5,503	4,675
Total	182,103	194,050	209,863	203,823	231,007
RYE:					
Canadian in Canada	2,174	2,202	2,220	2,218	2,860
U. S. in Canada	0	0	0	0	55
U. S. in the United States	5,897	6,432	7,040	6,738	4,353
Canad. in the United States	0	0	0	1,837	305
Total	8,071	8,634	9,260	10,793	7,573
BARLEY:					
Canadian in Canada	4,859	5,074	5,253	5,194	3,206
U. S. in Canada	0	0	0	0	10
U. S. in the United States	6,842	7,875	8,779	7,739	4,858
Canad. in the United States	557	595	807	0	0
Total	12,258	13,544	14,839	12,933	8,074
OATS:					
Canadian in Canada	5,229	5,292	5,682	6,220	3,321
U. S. in Canada	26	32	37	81	133
U. S. in the United States	6,313	7,146	7,483	13,568	8,266
Canad. in the United States	0	0	0	0	0
Total	11,568	12,470	13,202	19,869	11,720
MAIZE:					
U. S. in Canada	3,062	3,179	3,249	4,380	1,244
Of other origin in Canada	1,407	1,436	1,478	785	997
U. S. in the United States	15,681	19,318	24,501	38,877	20,646
Total	20,150	23,933	29,228	44,042	22,887

Quantities of cereals on Ocean passage with first destination for Europe.

PRODUCTS	Saturday nearest 1st of month				
	March 1935	February 1935	January 1935	March 1934	March 1933
	1,000 centals				
Wheat (and flour in terms of grain)	20,232	20,078	15,211	24,014	36,230
Rye	1,128	350	187	173	576
Barley	2,336	2,732	696	3,828	2,828
Oats	1,939	1,757	960	826	1,354
Maize	9,466	12,888	10,800	9,624	9,615

AUTHORITY: Broomhall's Corn Trade News.

Stocks belonging to farmers in Germany.

PRODUCTS	% stocks: total production					Stocks in 1,000 centals				
	28 Feb. 1935	31 Jan. 1935	31 Dec. 1934	28 Feb. 1934	28 Feb. 1933 1)	28 Feb. 1935	31 Jan. 1935	31 Dec. 1934	28 Feb. 1934	28 Feb. 1933
Winter wheat . . .	20	28	38	28	31	17,400	24,400	33,100	30,400	29,800
Spring wheat . . .	38	48	58	50	52	4,900	6,200	7,500	7,500	7,400
Winter rye . . .	26	34	45	30	31	43,120	56,400	74,600	57,100	56,500
Winter barley . . .	12	17	24	19	14	1,800	2,600	3,700	3,000	1,900
Spring barley . . .	29	37	48	33	27	16,100	20,500	26,600	20,000	15,400
Oats	46	55	65	50	50	55,300	66,100	78,100	76,600	73,300
Late potatoes . . .	40	49	56	37	39	368,300	451,200	515,600	334,200	377,000

1) Average between data for 15 February and 15 March.

AUTHORITY: *Marktberichtsstelle beim Reichsnährstand* (The absolute figures are calculated by the I. I. A.).

Stocks of cereals in commercial elevators and mills in Germany.

PRODUCTS	Last day of month				
	February 1935	January 1935	December 1934	February 1934	February 1933
	1,000 centals				
WHEAT:					
Grain	40,435	40,448	37,690	28,698	14,886
Flour for bread	3,583	3,691	3,252	3,494	3,009
TOTAL 1)	45,411	45,574	42,207	33,550	18,898
RYE:					
Grain	33,045	31,537	27,445	21,116	13,276
Flour for bread	2,092	2,410	2,463	1,859	1,552
TOTAL 1)	36,123	35,080	31,067	23,850	15,346
BARLEY	3,230	4,112	5,377	4,676	3,018
OATS	2,454	2,403	1,896	2,183	2,253

1) Including flour in terms of grain, on the basis of the coefficient: 1,000 centals of wheat flour = 1,388.89 centals of wheat; 1,000 centals of rye flour = 1,470.59 centals of rye.

Grain and flour stocks at the ports of Great Britain and Ireland 1).

PRODUCTS	First day of month				
	March 1935	February 1935	January 1935	March 1934	March 1933
	1,000 centals				
WHEAT:					
Grain	6,720	7,704	8,808	7,008	3,384
Flour as grain	768	768	864	960	456
TOTAL	7,488	8,472	9,672	7,968	3,840
BARLEY	900	980	1,080	1,480	720
OATS	288	256	288	688	288
MAIZE	4,368	4,464	4,320	3,744	2,496

1) Imported cereals.

AUTHORITY: *Broomhall's Corn Trade News*.

Stocks of Wheat in Italy.

LOCATION	Last day of month					
	Dec. 1934	Nov. 1934	Oct. 1934	Sept. 1934	Aug. 1934	July 1934
	1,000 centals					
Wheat destined for sale by holding pools ("ammassi collettivi"):						
in collective granaries	7,769	8,071	8,018	7,673	6,358	2,724
in granaries of producers or other persons	1,326	1,322	1,406	1,309	990	366
Total	9,095	9,393	9,424	8,982	7,348	3,090
Wheat in general stores and in bond 2)	7,578	8,031	8,120	8,979	8,455	6,390
Wheat in mills and attached elevators 3)	9,616	11 773	12,580	12,690	12,229	7,816
GRAND TOTAL	26,289	29,197	30,124	30,651	28,032	17,296

1) Including a small quantity of wheat belonging to holding pools which is stored in general stores. — 2) Not including quantities belonging to holding pools; see previous note. — 3) Provisional figures referring to mills which have a daily capacity of not less than 40 metric quintals.

Commercial stocks of cereals in Antwerp, Rotterdam and Amsterdam 1).

PRODUCTS AND LOCATION	Saturday nearest 1st of month 2)				
	March 1935	February 1935	January 1935	March 1934	March 1933
	1,000 centals				
WHEAT:					
Antwerp	2,050	1,997	2,285	1,232	738
Rotterdam	915	1,519	1,662	1,394	505
Amsterdam	14	11	19	20	16
RYE:					
Antwerp	200	119	162	189	176
Rotterdam	99	132	198	265	441
Amsterdam	5	1	0	35	6
BARLEY:					
Antwerp	196	112	196	309	217
Rotterdam	160	88	126	132	99
Amsterdam	6	0	6	66	47
OATS:					
Antwerp	45	57	63	138	84
Rotterdam	14	30	51	265	143
Amsterdam	36	22	24	27	50
MAIZE:					
Antwerp	260	71	203	146	205
Rotterdam	220	176	254	99	661
Amsterdam	30	39	60	28	107

1) Imported cereals. See note on p. 306 of the *Crop Report* of April 1934. — 2) For Antwerp the data refers to the last day of the preceding month, for Amsterdam to the first day of the month indicated.

AUTHORITIES: *Nederlandsche Silo-, Elevator- en Graanfactor Mij*, Amsterdam, and *Chamber of Commerce and Industry for Rotterdam*, Rotterdam.

Stocks of wheat and wheat flour in Australia on 30 November.

Total stocks of wheat and wheat flour in terms of grain, as compiled from information given by millers, merchants, Railways Departments, etc., amounted to 23,753,000 centals at the end of the last agricultural season, against 10,680,000 centals, 7,080,000 centals and 9,768,000 centals at the end of November 1933, 1932 and 1931 respectively. Stocks in farmers' hands are not included.

STOCKS OF COTTON

Stocks of cotton on hand in the United States.

LOCATION	Last day of month				
	February 1935	January 1935	December 1934	February 1934	February 1933
	1,000 centals				
In consuming establishments	5,718	5,881	6,403	8,149	7,088
In public storage and at compresses . . .	41,282	44,196	47,535	42,594	46,144
TOTAL . . .	47,000	50,077	53,938	50,743	53,232

Stocks of cotton at Bombay and at Alexandria.

PORTS	Thursday nearest 1st of month				
	March 1935	February 1935	January 1935	March 1934	March 1933
	1,000 centals				
Bombay 1)	2,876	2,452	2,084	4,256	2,596
Alexandria 2)	2,384	2,406	2,399	2,982	3,884

1) Stocks held by exporters, dealers and mills. — 2) From February 1934 quantities consumed in Alexandria as well as those returned to the interior of the country are not included; prior to this date quantities returned to the interior are included.

AUTHORITIES: *East Indian Cotton Ass.* and *Commission de la Bourse de Minet-el-Bassal.*

Stocks of cotton in Europe.

LOCATION, DESCRIPTION	Thursday or Friday nearest 1st of month				
	March 1935	February 1935	January 1935	March 1934	March 1933
	1,000 centals				
<i>Great Britain:</i>					
American	1,549	1,486	1,355	2,516	2,436
Argentine, Brazilian, etc.	763	843	1,019	419	152
Peruvian, etc.	515	563	615	393	301
East Indian, etc.	122	168	196	198	61
Egyptian, Sudanese	1,257	1,220	1,203	1,676	1,038
W. Indian, W. and E. African, Australian	165	199	245	200	302
TOTAL . . .	4,371	4,479	4,633	5,402	4,290
<i>Bremen:</i>					
American	1,064	1,210	1,287	2,790	2,544
Other	187	262	265	83	100
TOTAL . . .	1,251	1,472	1,552	2,873	2,644
<i>Le Havre:</i>					
American	715	698	697	1,383	1,307
French colonies	28	22	36	28	10
Other	98	102	105	39	31
TOTAL . . .	841	822	838	1,450	1,348
<i>Total Continent 1):</i>					
American	2,171	2,381	2,558	4,868	4,740
Argentine, Brazilian, etc.	122	183	202	41	20
E. Indian, Australian, etc.	174	179	173	134	61
Egyptian	282	266	220	111	139
W. Indian, W. African, E. African, etc. .	128	155	211	96	128
TOTAL . . .	2,877	3,164	3,364	5,250	5,088

1) Includes Bremen, Le Havre, and other Continental ports.

AUTHORITIES: *Liverpool Cotton Ass.* and (for Le Havre) *Bulletin de correspondance de la Bourse du Havre.*

WEEKLY PRICES BY PRODUCTS

(All quotations are, unless otherwise stated, for spots. The monthly averages are based on weekly quotations, the annual averages on the monthly)

DESCRIPTION	15	8	1	22	AVERAGE					Commercial Season 1)		
	March	March	March	Feb.	Feb.	March	March					
	1935	1935	1935	1935	1935	1934	1933			1933-34	1932-33	
Wheat.												
Budapest: Tisza wheat, 78 kg. p. hl. (pengő p. quintal)	17.35	17.77	18.03	17.92	17.86	9.87	* 15.18			9.70	13.73	
Braila: Good quality (lei p. quintal)	400	n. q.	n. q.	n. q.	n. q.	n. q.	* 575	* 375		* 535		
Winnipeg: No. 1 Manitoba (cents p. 60 lb.)	81 1/4	81 3/4	81 1/4	80 1/8	79 1/2	66 1/2	49 1/2			67 1/8	54 1/4	
Chicago: No. 2 Hard Winter (cents p.60 lb.)	n. 100 1/4	n. 104 1/4	n. 105	105	n. 104 1/2	88 3/4	* 53 1/4			89 1/4	59 1/4	
Minneapolis: No. 1 Northern (cents p.60 lb.)	106 1/8	108 3/4	110 3/4	110 1/8	109 1/2	86 7/8	* 52			89 1/8	60 1/8	
New-York: No. 2 Hard Winter (cents p. 60 lb.)	111 1/4	115 1/4	117 3/8	117	116 1/2	98 3/8	* 61 3/4			98 3/4	68 3/8	
Buenos Aires (a): Barilletta, 80 kg. p. hectol. (paper pesos p. quintal)	6.50	6.45	6.40	6.25	6.34	5.75	5.33			5.85	6.09	
Karachi: Karachi white, 2% barley 1 1/2 % dirt (rupees p. 656 lb.) . . . . .	...	...	...	...	...	21-4-0	30-0-5			22-2-4	28-4-2
Berlin: Home grown (free at Branden- burg stations; Rm. p. quintal) 2)	20.60	20.60	20.60	20.45	20.45	18.90	19.86			18.65	19.60	
Hamburg (c. i. f.; Rm. p. quintal):												
No. 2 Manitoba 3)	8.67	8.59	8.80	8.80	8.80	7.43	8.72			7.94	8.83	
Barusso 4)	5.93	5.81	5.85	5.81	5.89	5.49	6.98			6.22	7.76	
Antwerp (francs p. quintal):												
Home-grown	60.00	60.00	60.00	60.00	60.25	57.40	78.60			63.00	79.70	
No. 2 Manitoba (Atlantic) (in bond)	73.50	74.00	72.00	74.50	75.35	59.40	72.20			67.65	74.35	
Barusso (in bond)	46.50	47.50	47.00	47.75	48.85	45.60	58.90			53.00	66.20	
Paris: Home-grown (delivery regional depots; frs. p. quintal) 5):												
76 kg. p. hl., crop of 1934	78.00	79.00	80.00	80.00	80.50	127.50	99.75			125.65	107.35	
76 kg. p. hl., crop of 1933	133.50	133.50	133.50	133.50	133.50							
London: Home grown (sh. p. 504 lb.) 6).	20/6	20/6	20/6	20/6	21/-	19/6	22/ 9			20/10	24/8 1/2	
Liverpool and London (c.i.f., parcels, ship- ping current month; sh. p. 480 lb.)												
French (on sample)	18/3	n. q.	n. q.	18/3	18/1 3/4	n. q.	n. q.			n. q.	n. q.	
No. 1 Northern Manitoba (Atlantic)	33/3 3/4	31/9 3/4	32/-	n. 31/9	31/5	26/7 1/2	25/7 1/4			26/9	26/8 1/2	
No. 1 Northern Manitoba (Pacific)	31/9	31/9	31/8 1/4	31/4 1/2	31/1 1/4	26/-	24/8			26/7	26/4	
No. 3 Northern Manitoba (Pacific)	28 5/8 1/4	28 1/2 1/4	28 1/2 1/4	28/-	27/10	23/6 1/2	23/6			24 5/8 1/4	25 1/2 1/4	
White Pacific	n. q.	n. q.	n. q.	n. q.	n. q.	19/3 3/4				* 20/5	n. q.	
Rosafé (afloat) 7)	21/-	n. 20/4 1/4	20/3	20/-	20/0 3/4	17/1	20/0 1/4			19/5 1/4	23/2	
Australian	n. 25/3	24/3	24/3	n. 24/-	n. 23/8 1/4	21/2	22/9 1/4			23/4	25/7	
Milan (b): Home-grown, soft, Buono mer- cantile, 76-78 kg. p. hl. (lire p. quint.)	100.00	99.00	99.00	96.00	95.00	85.90	105.25			84.10	101.80	
Genoa: Sicilian Durum (c.i.f.; lire p. quint.)	121.50	120.50	120.00	116.50	114.00	109.80	* 126.65			107.85	* 119.75	
Genoa (c.i.f.; U. S. \$ p. quintal):												
No. 2 Manitoba (Pacific)	n. q.	n. q.	n. q.	n. q.	* 3.16	2.88	* 1.92			2.93	2.23	
No. 2 Canadian Durum 8)	n. q.	n. q.	4.18	4.13	4.08	3.25	* 2.17			3.11	2.59	
Plata, 80 kg. p. hl. 9)	n. q.	n. q.	99/-	97/-	97/10	87/2	* 1.60			* 92/10	* 1.83	
Rye.												
Berlin: Home-grown (free at Branden- burg stations; Rm. p. quintal) 2)	16.60	16.60	16.60	16.45	16.45	15.70	15.58			15.34	15.52	
Hamburg (c.i.f.; Rm. p. quintal): Plata												
72-73 kg. p. hl.	5.30	5.22	5.47	5.50	5.67	4.33	5.75			4.76	* 5.98	
Budapest: Pest rye (pengő p. quintal)	12.52	13.07	13.37	13.55	13.52	5.28	* 7.67			5.24	6.77	
Warsaw: Good quality (zloty p. quint.)	14.75	14.75	14.75	14.75	14.75	14.50	20.25			14.32	18.06	
Winnipeg: No. 2 (cents p. 56 lb.)	47 1/4	51 1/4	52	51 1/4	50 1/4	46 1/4	33 1/4			47 1/4	37 1/4	
Minneapolis: No. 2 (cents p. 56 lb.)	59 1/4	66 1/4	68	68 1/2	68 1/2	57 1/4	* 35 1/4			63	41 1/4	
Groningen (c): Home-grown (fl. p. quint.) . . . . .	...	7.20	7.15	7.20	7.27	7.17	4.00			6.65	3.92

* Indicates that the product during part of the period under review was not quoted. — n. q. = not quoted. — n. = nominal. — a) Thursday prices. — b) Saturday prices. — c) Prices of preceding Tuesday.

1) August-July. — 2) 1 Oct. 1933-15 Aug. 1934 for wheat and 1 Oct. 1933-15 July 1934 for rye: minimum prices; subsequently: fixed producers' prices for the price regions of Berlin town. See also *Bull. of Agric. Economics and Sociology*, Aug. 1934, p. 342. —

3) From Nov. 1934, No. 1 Manitoba. — 4) Aug.-Dec. 1932: 80 kg. p. hl.; year 1933: 79 kg.; subsequently: 80 kg. — 5) 16 July 1933-25 December 1934: minimum prices on the farm increased by transport costs from farm to Paris stations. From 1 August 1934 a considerable percentage of old crop wheat has to be used in the flour for breadmaking. — 6) From Aug. 1933: prices on the farm. — 7) August-Dec. 1932: 64 lb. p. bushel; Jan.-Oct. 1933: 63 1/2 lb.; Nov.-Dec. 1933: 63 lb.; year 1934: 64 lb.; subsequently: 63 1/2 lb. — 8) From Dec. 1934: No. 1. Can. Dur. — 9) From Feb. 1934: prices in sh. 1000 kg. — 10) Price of 21 Feb. — 11) 15

Feb. (revised): 21/6.

DESCRIPTION	15	8	1	22	AVERAGE				
	March	March	March	Feb.	Feb.	March	March	Commercial	
	1935	1935	1935	1935	1935	1934	1933	Season 1)	
								1933-34	1932-33
Barley.									
Warsaw: Malting, good quality (zloty p. quintal)	19.50	20.00	20.00	21.00	21.37	15.75	17.50	* 15.87	* 17.11
Braila: Average quality (lei p. quintal)	n. q.	280	285	285	285	145	* 165	* 154	* 186
Prague: Malting, av. qual. (crs. p. quintal) 2)	135.50	135.50	135.50	134.00	134.00	91.40	77.80	* 94.20	* 83.0
Winnipeg: No. 4 Western (cents p. 48 lb.)	38 1/4	41 5/8	43 1/2	42 3/4	42 3/4	38 1/4	26 7/8	36 7/8	29 3/4
Chicago: Feeding (on sample; cents p. 48 lb.)	69	70	69	75	79 3/4	51 1/4	* 32 3/4	54	33 3/4
Minneapolis: No. 2 Feeding (c. p. 48 lb.)	61	71	76	78	76 3/4	42 3/4	* 24	45 1/2	27 1/2
Berlin: Home-grown fodder (free at Brandenburg stations; Rm. p. quint.) 3) 4).	16.50	16.50	16.50	16.35	16.35	15.88	16.70	* 16.17	* 16.58
Antwerp: Danubian (in bond; francs p. q.)	48.00	48.50	49.00	50.00	60.85	49.50	53.30	49.35	55.50
London: English malting, best quality (sh. p. 448 lb.) 5)	37/6	37/6	37/6	37/6	37/6	35/-	33/9 1/2	* 39/5 1/4	* 35/-
Liverpool and London (c.i.f., parcels; shipping current month; sh. p. 400 lb.):									
Danubian, 3 % dirt.	n. q.	n. q.	n. q.	n. q.	n. q.	13/6 1/4	n. q.	* 13/9 1/2	* 16/7
No. 3 Canadian Western	22 1/2	22/9	23 1/1 1/2	23 3/3 1/4	22/10 3/4	18/2 1/2	16/5 1/2	17/9 1/8	* 18/1 1/2
Californian malting (sh. p. 448 lb.)	n. q.	n. q.	n. q.	n. 31/-	* 31/3	18/9	20/9 1/2	22/7 1/4	22/8
Plata (64-65 kg. p. hl)	16/3	16/9	16/9	17/6	18/0 1/4	13/4 1/2	14/8 3/4	14/2 1/2	* 15/9 1/2
Persian	15/4 1/2	16/6	16/7 1/2	17/-	18/0 3/4	13/5	14/8 3/4	* 14/0 3/4	* 16/4
Groningen a): Home grown, winter (fl.p.q.) . . . . .	...	4.97	4.97	5.01	5.14	4.18	4.18	4.44	4.40
Oats.									
Braila: Good quality (lei p. quintal)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	* 148	* 195
Winnipeg: No. 2 White (cents per 34 lb.)	40 1/8	42 1/4	43	42 1/4	42 3/8	33 3/8	24 3/8	33 3/8	26 1/2
Chicago: No. 2 White (cents per 32 lb.)	52 1/2	56	55 3/4	56 3/2	56 1/4	35 3/2	* 18 1/2	37 3/4	21 1/4
Buenos Aires b): Current quality (paper pesos p. quintal)	5.45	5.52	5.50	5.45	5.35	3.49	4.08 1/2	3.65	4.43
Berlin: Home grown (free at Brandenburg stations; Rm. p. quint.) 3)	16.70	16.70	16.70	16.55	16.55	14.03	12.61	14.92	13.05
Paris: Home grown, black and other (delivery regional depots; frs. p. quintal)	40.35	43.75	45.25	51.65	50.15	43.05	71.05	48.00	76.30
London: Home grown white (sh. p. 336 lb.) 5)	20/6	20/6	20/6	20/6	20/6	19/6	18/-	18/1 1/2	18/6
Liverpool and London (c.i.f., parcels; shipping current month; sh. p. 320 lb.):									
Canadian, No. 2 Western (Pacific) 6)	19/9	20/3	20/3	20/3	20/3	16/8	15/4 1/2	* 17/4	* 16/1
Plata (f. a. q.)	12/9	13/-	13/-	13/-	12/6	8/9 1/2	11/9	10/2	12/9
Milan (c) (lire p. quintal):									
Home grown	65.50	63.50	n. 62.00	60.00	58.10	52.00	64.75	50.70	62.8
Foreign	63.50	63.50	61.50	59.00	55.60	52.80	53.25	50.05	57.10
Maize.									
Braila: Average quality (lei p. quintal)	215	210	215	217	217	188	* 149	* 173	* 175
Chicago: No. 3 Yellow (cents p. 56 lb.)	83	84	86 3/8	88	88 1/4	* 49	* 26 3/4	46 1/8	28 1/2
Buenos Aires (b): Yellow Plata (paper pesos p. quintal)	5.25	4.8	4.85	4.65	5.04	5.70	4.11	4.26	4.44
Antwerp (in bond; francs p. quintal):									
Bessarabian	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	49.60	n. q.	n. q.
Yellow Plata	48.50	48.00	48.00	49.50	51.60	50.90	52.60	48.35	54.90
Cinquantino (Argentine "Cuarentino")	51.50	50.00	52.00	52.50	54.25	54.90	74.30	58.00	67.50
Liverpool and London (c.i.f., parcels; shipping current month; sh. p. 480 lb.):									
Danubian	21/3	n. q.	n. q.	n. q.	n. q.	17/11 1/2	16/5 3/4	16/9 3/4	* 18/3 1/4
Yellow Plata	19/3	18/1 1/2	18/11 1/4	16/10 1/2	18/11 1/4	18/9 1/2	17/8 1/2	16/7	* 18/0 1/2
No. 2 White flat African	n. 19/-	19/6	19/6	n. q.	* 20/2	n. q.	17/4 1/2	n. q.	* 19/3
Milan (c): « Alto Milanese » (lire p. quint.)	67.00	66.00	66.00	63.00	59.25	53.40	51.75	50.80	58.40

* Indicates that the product, during part of the period under review, was not quoted. — n. q. = not quoted. — n. = nominal. — a) Prices of preceding Tuesday. — b) Thursday prices. — c) Saturday prices.

x) Barley and oats: August-July; maize: May-April. — a) From August 1934: monopoly price, paid to producers, for delivery Prague. See also *Bull. of Agric. Econ. and Soc.*, Nov. 1934, p. 512 — 3) From 16 July 1934 for fodder barley and from 1 August 1934 for oats: fixed producers' prices for the price region of Berlin town. See also *Bull. of Agric. Econ. and Soc.*, Aug. 1934, p. 342. — 4) July-August 1933: two rowed winter barley; Sept. 1933-June 1934: spring barley, average quality. — 5) From Aug. 1933: prices on the farm. — 6) June-Dec. 1934: Atlantic. — 7) Price of 21 Feb. — 8) Shipping May. — 9) In store. — 10) Jan. average (revised): 91. — 11) No. 3, White Flat Afr.

DESCRIPTION	15	8	1	22	AVERAGE					Commercial	
	March	March	March	Feb.	Feb.	March	March	Season 1)	1934	1933	
	1935	1935	1935	1935	1935	1934	1933				
Rice (milled).											
Valencia (a): No. 3 Belloch (pesetas p. quintal)	56.50	56.50	55.50	55.50	55.75	41.60	43.90	46.95	43.10		
Milan (b) (lire p. quintal):											
Vialone, oiled	149.00	147.50	147.50	144.00	144.25	197.50	190.50	177.10	198.20		
Maratelli, oiled	127.00	126.50	126.50	124.00	124.25	150.80	135.00	138.05	139.90		
Originario, white	107.00	106.50	106.50	103.50	102.75	104.30	95.00	102.80	95.50		
Rangoon: No. 2 Burma (rupees p. 7500 lb.) . . . . .	...	...	...	...	...	161	* 185 ¹ / ₄	201 ¹ / ₄	194 ¹ / ₄		
Saigon (Indo-chinese piastres p. quintal):											
No. 1 Round white, 25 % broken . . . . .	...	...	...	3.84	^p 3.68	2.85	4.10	3.25	4.08		
No. 2 Japan, 40 % broken . . . . .	...	...	...	3.67	^p 3.55	2.72	3.92	3.09	3.90		
Marseilles (a): No. 1 Saigon (c. i. f.; frs. p. quintal)	43.00	47.00	47.00	45.00	46.00	44.20	52.00	45.95	53.10		
London (a) (c. i. f.; shillings p. cwt.):											
No. 3 Spanish Belloch, oiled	13/6	13/6	n. q.	11/3	* 11/4	* 10/9	* 12/-	* 10/9	12/5 ¹ / ₄		
No. 6 Italian good, oiled	13/9	13/9	13/9	13/9	13/9	* 12/1 ¹ / ₂	* 10/2	11/10 ¹ / ₄	11/2 ¹ / ₄		
American Blue Rose, extra fancy	n. q.	n. q.	n. q.	17/-	* 17/1 ¹ / ₂	* 17/4 ¹ / ₂	* 14/9 ¹ / ₄	17/3 ¹ / ₂	16/9 ¹ / ₄		
No. 2 Rangoon or Bassein (Burma)	7/3	7/6	7/7 ¹ / ₂	7/6	7/5	* 5/8 ¹ / ₂	6/4 ¹ / ₄	6/7 ¹ / ₄	6/6 ¹ / ₄		
No. 1 Saigon	7/3	7/3	7/3	6/10 ¹ / ₂	6/10 ¹ / ₂	* 5/8 ¹ / ₂	6/7 ¹ / ₄	6/3 ¹ / ₄	6/9 ¹ / ₄		
Siam Super, white	9/3	9/1 ¹ / ₂	8/10 ¹ / ₂	8/10 ¹ / ₂	8/5 ¹ / ₂	* 6/10	7/10 ¹ / ₂	7/5	8/1 ¹ / ₂		
Tokio: Chumai (brown Japanese, average quality, yen p. koku)	29.70	30.00	30.00	29.80	29.77	22.88	21.64	26.09	21.62		
Linseed.											
Buenos Aires (a): Current quality (paper pesos p. quintal)	11.75	11.90	11.95	11.85	11.86	11.89	8.99	12.74	10.56		
Antwerp: Plata (in bond; frs. p. quint.)	92.00	94.00	95.00	95.50	98.37	101.00	99.00	107.60	111.70		
London (c. i. f.; £ p. long ton):											
Plata (delivery Hull)	9-2-6	9-5-0	9-5-0	9-5-0	9-6-3	9-7-3	8-3-0	10- 0-8	9-11-11		
Bombay bold	11-10-0	11-12-6	11-12-6	11-12-6	12-2-6	11-3-6	10-1-3	11-17-0	11- 5- 4		
Duluth: No. 1 Northern (quotations of terminal market; cents p. 56 lb.)	^a 174	^a 176 ¹ / ₂	^a 182	^a 186 ¹ / ₂	^a 186 ¹ / ₂	^a 179 ¹ / ₄	* 111 ¹ / ₂	186 ¹ / ₄	156 ¹ / ₄		
Cottonseed.											
Alexandria (piastres p. ardeb):											
Upper Egypt	64.2	69.8	71.4	70.7	72.8	39.3	69.5	41.8	67.3		
Sakellaridis	59.5	65.5	66.3	66.3	68.5	35.4	65.7	* 37.5	63.6		
London: Sakellaridis (c. i. f., delivery Hull; £ p. long ton)	n. 6-1-3	n. 6-10-0	n. 6-12-6	6-16-3	6-19-1	4-2-0	6-12-6	4-5-11	6-11-4		
Cotton.											
New Orleans: Middling (cents p. lb.)	11.33	12.50	12.70	^b 12.59	12.59	12.18	* 6.24	10.90	7.27		
New York: Middling (cents p. lb.)	11.50	12.45	12.60	^b 12.65	12.62	12.31	* 6.42	11.07	7.38		
Bombay: M. g. Broach f. g. (terminal market quotations; rup. p. 784 lb.) . . . . .	...	...	...	...	...	^a 199 ¹ / ₄	^a 180 ¹ / ₄	197	201 ¹ / ₄		
Alexandria (talariis p. kantar):											
Sakellaridis, f. g. f.	14.75	15.90	15.85	15.90	15.74	15.80	12.85	14.44	14.15		
Ashmuni-Zagora, f. g. f.	12.75	13.70	13.65	13.57	13.44	12.37	11.18	11.63	12.46		
Bremen: Middling (U. S. cents p. lb.)	13.47	14.53	14.62	14.72	14.63	13.87	* 7.59	12.56	8.54		
M. g. Broach, f. g. (pence p. lb.)	n. 6.30	n. 6.40	n. 6.45	n. 6.50	n. 6.55	n. 4.93	n. 4.32	n. 4.81	n. 4.81		
Le Havre: Middling (Gulf; frs p. 50 kg.)	232.50	248.00	249.50	250.00	254.00	245.00	227.00	229.85	237.75		
Liverpool (pence per lb.):											
Middling, fair	n. 7.59	n. 8.10	n. 8.09	n. 8.10	n. 8.07	n. 7.58	n. 6.30	n. 7.11	n. 6.76		
Middling	6.59	7.10	7.09	7.10	7.07	6.53	5.10	6.02	5.61		
São Paulo, g. f.	6.76	7.24	7.24	7.25	7.19	6.43	n. 5.39	6.13	n. 5.87		
M. g. Broach, f. g.	5.59	5.96	5.94	5.89	5.88	4.77	n. 4.45	n. 4.62	n. 5.01		
Egyptian Sakellaridis, f. g. f.	8.25	8.84	8.81	8.86	8.83	8.86	7.12	8.07	7.77		

* Indicates that the product, during part of the period under review, was not quoted. — n. q. = not quoted. — n. = nominal. — a) Thursday prices. — b) Saturday prices.

1) Cottonseed: Sept.-Aug. cotton: Aug.-July. — 2) 15 Feb.: 3.72; 8 Feb.: 3.56; 1 Feb.: 3.61. — 3) 15 Feb.: 3.59; 8 and 1 Feb.: 3.48. — 4) May future. — 5) Price of 21 Feb. — 6) April-May future.

DESCRIPTION	15	8	1	22	AVERAGE				
	March	March	March	Feb.	Feb.	March	March	Commercial Season	
	1935	1935	1935	1935	1935	1934	1933	1934	1933
Bacon.									
London, Provision Exchange (a) (shill. p. cwt.):									
English, No 1, lean sizable.	87/6	87/6	87/-	92/6	92/9	93/10	..	91/2	..
Danish, No 1, sizable.	82/-	82/-	81/-	85/-	86/9	89/2	71/5	87/11	74/5
Irish, No 1, sizable.	82/-	80/-	80/6	89/-	89/10	91/7	82/9	90/5	83/4
Lithuanian, No 1, sizable.	75/-	75/-	75/-	78/-	79/3	82/3	66/-	82/-	65/5
Dutch, No 1, sizable.	78/-	78/-	78/-	82/-	83/-	85/-	66/7	84/-	67/6
Polish, No 1, sizable.	73/-	73/-	73/-	76/-	77/3	81/-	64/-	80/11	63/10
Swedish, No 1, sizable.	77/-	76/-	75/6	81/-	83/3	85/9	67/-	84/4	70/-
Canadian, No 1, sizable.	73/-	73/-	72/6	72/6	73/7	79/9	66/-	80/3	64/6
Butter.									
Copenhagen (b): Danish (crs. p. quint.) . .	175.00	180.00	190.00	190.00	197.50	145.00	158.40	160.75	171.00
Leeuwarden, Commission for butter quotations (b): Dutch (cents p.kg) . . .	37	42	47	52	52 1/4	44	53	44 3/4	60
Zutphen, auction: Dutch (price for home consumption; cents p. kg.)	140	145	150	150	151 1/2	146 1/2	153 1/2	147 1/2	159 1/2
Germany (c) (fixed prices; Rm. p. 50 Kg.) 1):									
Butter with quality mark	130.00	130.00	130.00	130.00	130.00	129.37	93.10	129.04	112.72
Creamery butter	123.00	123.00	123.00	123.00	123.00	123.00	82.25	120.87	106.25
London (d): English creamery, finest quality (shillings p. cwt.)	112/-	112/-	119/-	119/-	119/-	109/8	152/2	109/6	140/10
London, Provision Exchange (a) (shill. p. cwt.):									
Danish creamery, unsalted.	104/6	107/-	112/-	112/-	116/4	93 1/2 1/2	96/11	98/8	103/9
Estonian, unsalted	n. q.	77/-	n. q.	n. q.	n. q.	* 71/-	n. q.	* 67/11	* 84/4
Latvian, unsalted	n. q.	n. q.	90/-	95/-	* 97/6	* 71/6	* 80/-	* 69/3	* 82/9
Dutch creamery, unsalted	79/6	87/6	92/-	103/-	105/6	84/11	93/-	80/4	103/4
Argentine, finest, unsalted	n. q.	n. q.	n. q.	n. q.	* 93/-	67/7	71 3/4 1/2	* 68/3	* 77/10
Siberian, salted	n. q.	n. q.	n. q.	n. q.	n. q.	* 69/6	* 73/4	* 66/-	* 73/5
Australian, finest, salted.	71/6	75/-	80/6	83/6	87/-	69/9	71/7	70/2	80/-
New Zealand, finest, salted	73/6	75/6	80/6	84/-	87/9	71/8	73/3	72/7	81/1
Cheese.									
Milan (lire p. quintal):									
Parmigiano-Reggiano, 1st quality, production 1932 2)	700.00	700.00	700.00	700.00	700.00	943.00	1,262.00	989.00	1,234.00
Parmigiano - Reggiano, 1st quality, production 1933 2)	595.00	595.00	595.00	595.00	595.00	803.00	1,020.00	806.00	1,015.00
Green Gorgonzola, mature, choice . . .	460.00	445.00	440.00	425.00	422.50	402.00	533.00	412.60	473.70
Rome: Roman Pecorino, choice (lire p. q)	687.00	687.00	662.00	662.00	662.00	687.50	1,185.00	658.65	1,029.00
Alkmaar: Edam 40 + (40 % butterfat, with the country's cheesemark) factory cheese, small (florins p. 50 kg.) . . .	17.00	17.00	17.00	17.00	17.00	21.90	22.90	20.98	22.40
Gouda: Gouda 45+ (whole milk cheese, with the country's cheesemark) home made (florins p. 50 kg.)	17.00	17.50	18.50	19.00	19.25	22.95	26.30	22.52	26.59
Kempten (c) (Rpf. p. 1/2 kg.):									
Soft cheese, green, 20 % butterfat . .	26	26	26	26	26	24	17 1/2	23 1/4	20 7/8
Emmenthal from the Allgäu, whole milk cheese, 1st quality	75	75	75	75	74	71	74 1/2	71 1/2	72 1/2
London, Provision Exchange (a) (shill. p. cwt.):									
English Cheddar, finest farmers . . .	86/-	86/-	86/-	86/-	86/-	94/-	93/-	* 83/5	86/3
English Cheshire, officially graded 3) .	92/2	92/2	87/6	92/2	90/9	102/2	80/9	83/4	94/4
Italian Gorgonzola (d)	88/8	88/8	86/4	86/4	86/-	82/10	91/-	82/9	85/3
Dutch Edam, 40 + (d)	39/6	41/6	43/6	43/-	43/3	60/4	60/-	54/5	59/8
Canadian, finest white	61/-	61/-	61/-	60/-	59/6	53/9	64/-	54/-	59/8
New Zealand, finest white	44/3	45/3	46/3	47/9	47/10	43/5	41/7	46/5	46/10

* Indicates that the product, during part of the period under review, was not quoted. — n. q. = not quoted. — n. = nominal —
a) Average prices of Thursday and Friday morning. — b) Thursday prices. — c) Wednesday prices. — d) Average prices for the week.

1) See note on page 306 of the *Crop Report* of April 1934. — 2) Prices of cheese made in 1932 are compared for the preceding years, with those of cheese made in 1931 and in 1930 respectively; prices of 1933-cheese with those of cheese made in 1932 and 1931. The yearly averages refer to periods from Sept. to August. — 3) From May 1934 onwards: National Mark, selected.

DESCRIPTION	15	8	1	22	AVERAGE					
	March	March	March	Feb.	Feb.	March	March	Commercial		
	1935	1935	1935	1935	1935	1934	1933	Season		
								1934	1933	
Eggs (fresh).										
Antwerp, auction: Belgian, average qual. (frs. p. 100)	26.00	26.00	30.00	33.00	35.00	28.20	32.80	42.80	48.40	
Denmark (a): Danish for export (crs. per quintal)	66.00	80.00	80.00	80.00	87.50	51.60	60.00	103.60	105.85	
Roermond, auction: Dutch, 57/58 gr. each, white (B. p. 100) 1): Fixed price for export into Germany. Price for other destinations . . . . .	... ... ...	... ... ...	... ... ...	... ... ...	... ... ...	... ... ...	3.02 2.09 2.09	3.96 3.34	3.48 3.48
Warsaw (b): Polish, average weight 50 gr. each, different colours (zloty p. 1440, including box) . . . . .	...	...	...	112.50	97.00	101.00	106.50	123.60	
Berlin (c): German, big, new laid (Rm. p. 100): marked "GIS", 65 gr. each marked "GIB", 55/60 gr. each	9.00 8.00	9.00 8.00	9.50 8.50	11.00 10.00	11.12 10.12	9.55 8.12	9.00 7.31	10.37 9.03	10.41 9.05	
London, Egg Exchange (d) (sh. p. great hundred): English, National mark, specials Belgian, 15 1/2 lb. p. 120 Danish, 18 lb. p. 120 North Irish, 18 lb. p. 120 Dutch, all brown, 18 lb. p. 120 Polish, 51/54 grams each 2) Chinese, violet Australian, 16 lb. p. 120	11/- n. q. 10/3 10/6 10/4 1/2 n. q. n. q. 8/-	11/- n. q. 10/4 1/2 10/10 1/2 10/10 1/2 n. q. n. q. n. q.	12/- n. q. 10/6 11/3 11/7 1/2 n. q. n. q. n. q.	12/9 n. q. 12/4 1/2 13/6 12/10 1/2 n. q. n. q. 9/1 1/2	13/6 1/4 n. q. 12/11 1/4 13/5 1/2 12/9 n. q. 7/7 1/2 8/7 1/2	10/0 1/4 * 7/4 1/2 9/11 1/4 9/6 1/2 * 10/4 1/2 5/7 6/0 1/4 n. q.	10/9 8/4 1/2 9/4 1/2 10/1 18/8 1/2 7/0 1/4 n. q. n. q.	15/5 * 11/0 1/4 12/5 1/2 12/9 1/2 13/5 6/10 1/4 * 8/3 1/2 * 11/5 1/2	13/10 1/4 * 11/1 12/9 1/2 15/1 * 14/0 1/2 * 7/4 1/4 * 9/10 * 12/4 1/2	
Maritime freights 3).										
Shipments of Wheat and Maize.										
								1933-34 10)	1932-33 10)	
Danube to Antwerp/Hamburg. 1/ (shill. per Black Sea to Antwerp/Hamb. 1/ long ton)	n. q. 9/9	n. q. 9/9	n. q. 10/-	n. q. 10/1 1/2	n. q. 10/2	* 14/- 10/6 1/2	* 14/1 1/4 9/10 1/4	* 14/1 10/3	* 13/9 10/-	
St. John to Liverpool 4) Port Churchill to United King- dom	1/6 n. q.	1/6 n. q.	1/6 n. q.	1/6 n. q.	1/6 n. q.	2/3 n. q.	* 1/6 n. q.	* 1/11 n. q.	* 1/7 n. q.	
Montreal to United Kingdom. 1/ (shill. per Gulf to United Kingdom 4). 480 lb.)	2/6 1/6	2/6 1/6	2/6 1/6	2/6 1/6	2/6 1/6	2/9 1/6	2/1 1/2 1/6	2/6 1/4 1/6	2/- 1/6	
New York to Liverpool 4) Northern Range to U.K./Cont.	n. q. n. q.	n. q. n. q.	n. q. n. q.	n. q. n. q.	n. q. n. q.	* 1/9 n. q.	* 0.05 n. q.	* 1/9 n. q.	* 0.06 n. q.	
North Pacific to United Kingdom (sh. per long ton)	17/6	17/-	17/-	17/-	17/-	19/1	* 19/6	20/1	20/10	
Vancouver to Yokohama 4) (U.S.A. \$ p. short ton) 5)	2.50	2.50	2.50	2.50	2.50	2.35	2.00	2.41	1.98	
La Plata Down River 6) Bahia Blanca to U.K./ Continent	13/6	13/6	13/-	13/-	13/1 1/2	14/-	13/3	14/1	14/-	
La Plata Up River 7) /Neco- chea to U.K./Continent Western Australia to U. K./Continent	14/9 22/-	14/9 22/-	14/3 22/-	14/3 22/-	14/3 1/2 22/1 1/2	15/3 1/2 22/6	14/10 1/4 22/9 1/4	15/9 23/10 1/4	15/10 24/6 1/2	
Shipments of Rice.										
								1934	1933	
Saigon to Europe (shill. per Burma to U. K./Continent . . long ton)	n. q. 21/6	n. q. 21/6	n. q. 22/6	n. q. 22/6	n. q. 22/6	22/10 23/7 1/4	n. 20/- 22/6	24/2 1/4 * 23/3	23/5 1/4 * 23/1 1/4	

* Indicates that the product or the maritime freight, during part of the period under review, was not quoted. — n. q. = not quoted. — n. = nominal. — a) Average prices for weeks beginning on Fridays indicated. — b) Average prices for weeks beginning on preceding Mondays. — c) Thursday prices. — d) Prices of preceding Monday.

1) See note on p. 307 of the *Crop Report* for April 1934. — 2) From Nov. 1933, 51/52 grams each. — 3) Rates for entire car goes; see note on p. 307 of the *Crop Report* for April 1934. — 4) Rates for parcels by liners. — 5) May-Oct. 1934 and from 25 Jan. 1935: Canadian \$. — 6) "Down River" includes the ports of Buenos Aires, La Plata and Montevideo. — 7) "Up River" includes the ports on the Paraná River as far as San Lorenzo. Cargoes from ports beyond San Lorenzo (Colastine, Santa-Fé and Paraná) are subject to an extra rate of freight. — 8) 11-16 Feb.: 139.17; 4-9 Feb.: 148.33; 28 Jan.-2 Feb.: 134.17; Jan. aver.: 130.83. — 9) Thursday prices, supplied by *Nat. Mark Central, Ltd.*, London. — 10) August-July. — 11) Freight in U. S. A. \$ per 100 lb. — 12) Minimum rates according to schedule adopted by shipowners from 14 Feb.; see note on p. 247.

Minimum rates of freight for River Plate Range.

The interested ship owners who represented many nations, with the purpose of finding a remedy for the critical position that had arisen during recent months in the transport of cereals from Argentina owing to the low level touched by rates of freight, on 13th February inst., adopted the following schedule of *minimum rates of freight* for "handy size" steamers (5,500 tons carrying capacity) loading from San Lorenzo or Rosario to picked U. K. ports:

up to end February	14/- per long ton,
1-14 March	14/6 " " "
15-31 March	15/- " " "
1-14 April	15/6 " " "
15-30 April	16/3 " " "

with reductions of 3d. for vessels of 7,000 tons, 6d. for 8,000 tons and 1/-s. for vessels over 8,000 tons.

The usual options over or under the basic rates are:—

Not above Santa Fé: 1/3 extra; Bahía Blanca, Buenos Ayres, La Plata, Montevideo: 1/3 less; Necochea, same rate as Up River.

U. H./continent: 3d. extra; Antwerp: 6d. less; Rotterdam: 3d. less; France or Germany: 1/-s. extra; Marseilles and West Italy: 6d. extra.

EXCHANGE RATES.

RELATION OF VARIOUS CURRENCIES TO THEIR PARITY WITH THE SWISS FRANC (1)

NATIONAL CURRENCIES	Exchange rates				Percentage bonus (+) or loss (-)			
	15 March 1935	8 March 1935	1 March 1935	22 Feb. 1935	15 March 1935	8 March 1935	1 March 1935	22 Feb. 1935
Germany: free reichsmark.	124.125	123.875	123.925	123.875	+ 0.5	+ 0.3	+ 0.4	+ 0.3
Argentina: paper peso †)	92.031	90.750	92.656	93.750	- 58.2	- 58.8	- 57.9	- 57.4
Belgium: belga.	71.925	71.900	72.200	72.075	- 0.2	- 0.2	+ 0.2	0.0
Canada: dollar	3.040	3.010	3.060	3.080	- 41.3	- 41.9	- 41.0	- 44.6
Denmark: crown	65.850	64.750	66.250	66.950	- 52.6	- 53.4	- 52.3	- 51.8
Spain: peseta	42.175	42.125	42.200	42.200	- 57.8	- 57.9	- 57.8	- 57.8
Egypt: pound 2)	14.725	14.520	14.825	15.000	- 41.6	- 42.4	- 41.2	- 40.5
United Kingdom: pound sterling	3.086	3.046	3.094	3.077	+ 0.8	- 0.5	+ 1.1	+ 0.5
United States: dollar	20.360	20.337	20.380	20.379	+ 0.3	+ 0.2	+ 0.4	+ 0.4
France: franc	56.250	56.500	56.750	55.250	- 37.9	- 37.7	- 37.4	- 39.0
Indo-China: piaster 3)	111.174	109.626	112.176	113.500	- 41.2	- 42.0	- 40.7	- 40.0
Hungary: pengő 4)	25.650	25.625	26.150	26.100	- 6.0	- 6.1	- 4.1	- 4.3
India: rupee †)	86.877	85.849	86.850	87.687	- 66.4	- 66.8	- 66.4	- 66.1
Italy: lira	209.025	208.875	208.875	208.775	+ 0.3	+ 0.3	+ 0.3	+ 0.2
Japan: yen †)	58.200	58.225	58.300	58.300	+ 0.1	+ 0.1	+ 0.3	+ 0.3
Netherlands: florin	n. 3.100	n. 3.100	n. 3.080	n. 3.080	- 0.0	- 0.0	- 0.6	- 0.6
Poland: zloty	76.000	74.750	76.250	76.350	- 45.3	- 46.2	- 45.1	- 45.0
Rumania: leu	12.890	12.875	12.905	12.905	+ 0.7	+ 0.6	+ 0.9	+ 0.9
Sweden: crown								
Czechoslovakia: crown								

1) The exchange rate represents the value of 100 units of the national currency (for the dollar and the pound sterling 1 unit) expressed in Swiss francs, as far as possible on the Zurich Exchange. With regard to the currencies marked thus (†) a conversion has been made; the original exchange rates on London being converted into Swiss francs by means of the rate of the £ in Zurich. — 2) As the relation between the Egyptian pound and the pound sterling remains unchanged, the exchange rate of the latter only is given. — 3) As the relation between the Indo-Chinese piaster and the French franc changes only slightly, the exchange rate of the latter only is given. — 4) Bank notes.

VARIATIONS IN THE INDEX-NUMBERS OF PRICES

On the following pages the index-numbers of prices of agricultural products and other price-indices of interest to the farmer are given as published in the different countries. Owing to the substantial divergence, which often exists in the value and significance of the data available, it has been considered opportune to reproduce all the data in their original form only, without attempting formally to unite them.

In addition to the original data summary tables are given below.

Percentage variations in the index-numbers for February 1935

COUNTRIES	Comparison with January 1935		Comparison with February 1934	
	Index-numbers of prices of agricultural products	Index-numbers of wholesale prices in general	Index-numbers of prices of agricultural products	Index-numbers of wholesale prices in general
Germany	— 0.6	— 0.2	+ 8.5	+ 4.9
England and Wales	— 1.6	— 0.4	+ 4.3	+ 1.0
Argentina	— 3.7	—	+ 0.9	—
Canada	+ 1.0	+ 0.7	+ 6.9	— 0.1
United States: Bur. of Agric. Economic . .	+ 3.7	—	+ 33.7	—
United States: Bur. of Labor	+ 1.9	+ 0.9	+ 29.0	+ 8.0
Finland	+ 1.3	0.0	+ 5.5	0.0
Hungary	0.0	0.0	+ 27.1	+ 16.2
Italy	+ 0.7	+ 0.5	+ 13.3	+ 2.0
New Zealand	+ 4.4	—	— 3.3	—
Netherlands	— 2.0	— 1.3	— 10.9	— 3.7
Poland	— 2.8	— 1.3	— 13.7	— 9.2
Yugoslavia:				
plant products.	— 3.2	— 0.8	+ 11.9	+ 0.5
livestock products	— 2.6	—	+ 0.2	—

INDEX-NUMBERS OF PRICES OF AGRICULTURAL PRODUCTS AND OF COMMODITIES BOUGHT BY THE FARMER ¹⁾

DESCRIPTION	Feb.	Jan.	Dec.	Nov.	Oct.	Sept.	Feb.	Feb.	Year	
	1935	1935	1934	1934	1934	1934	1934	1933	1934	1933
Germany										
(Statistisches Reichsamt)										
1913 = 100.										
Foodstuffs of plant origin	113.8	113.2	112.9	112.7	112.2	112.9	101.0	97.0	108.7	98.7
Livestock	74.9	76.2	76.8	78.5	79.3	76.9	68.8	60.5	70.9	64.3
Livestock products	107.2	108.8	109.5	110.5	109.1	106.0	105.7	88.0	105.0	97.5
Feeding stuffs	105.0	105.2	105.0	104.7	105.1	105.8	94.4	81.8	102.0	86.4
Total agricultural products	99.7	100.3	100.5	101.1	100.9	99.8	91.9	82.2	95.9	86.8
Fertilizers ¹⁾	67.3	67.0	65.3	65.0	68.4	68.4	70.6	73.4	68.6	70.2
Agricultural dead stock	111.0	111.0	111.0	111.0	111.2	111.3	110.8	111.5	111.1	111.6
Finished manufactures ("Konsumgüter")	124.5	123.5	122.5	122.1	120.8	118.4	115.0	110.5	117.3	111.7
Wholesale products in general	100.9	101.1	101.0	101.2	101.0	100.4	96.2	91.2	96.4	93.3
England and Wales										
(Ministry of Agriculture and Fisheries)										
Average for corresponding months										
of 1911-13 = 100.										
Agricultural products ²⁾	122	124	120	120	122	126	117	110	119	111
Feeding stuffs	92	98	98	96	98	102	83	91	91	85
Fertilizers	88	88	89	89	88	89	90	90	90	90
Wholesale products in general ³⁾	98.1	98.4	97.4	95.3	95.4	96.6	97.1	90.6	96.3	93.7
Argentina										
(Banco de la Nación Argentina)										
1926 = 100.										
Cereals and linseed	65.1	68.8	71.1	69.2	71.8	78.7	62.0	52.6	68.1	54.4
Meat	79.1	82.1	83.5	83.4	81.2	80.0	74.3	57.7	78.5	65.9
Hides and skins	74.4	75.4	73.0	69.6	67.5	65.3	86.3	49.1	71.6	63.9
Wool	65.7	68.0	68.3	72.9	80.4	80.5	98.3	40.8	84.3	54.6
Dairy products	75.9	66.8	66.4	65.5	68.4	68.1	51.6	52.3	62.3	57.4
Forest products	91.9	84.4	87.9	70.1	70.2	71.6	74.8	71.8	73.1	72.5
Total agricultural products	68.5	71.1	72.5	70.8	72.9	77.0	67.9	52.4	70.5	56.9
Canada										
(Internal Trade Branch										
of the Dominion Bureau of Statistics)										
1926 = 100.										
Field products (grain, etc.)	55.7	55.7	56.0	55.7	55.3	58.9	49.3	35.8	53.9	45.7
Livestock and livestock products	72.6	71.0	70.9	70.4	70.4	65.3	72.5	54.7	67.6	59.6
Total Canadian farm products	62.0	61.4	61.6	61.2	60.9	61.3	58.0	42.9	59.0	51.0
Fertilizers	75.8	75.8	75.8	75.8	75.8	74.6	77.3	72.9	76.2	73.8
Consumers' goods (other than foodstuffs, etc)	77.3	77.3	76.7	76.7	76.9	77.3	77.7	75.8	77.2	76.0
Wholesale products in general	72.0	71.5	71.2	71.2	71.4	72.0	72.1	63.5	71.6	67.2

¹⁾ For an explanation of the method of calculation of the index-numbers, reference should be made to the Institute's publication *Index-numbers of Prices of Agricultural Products and other Price-indices of interest to the Farmer* (Rome, 1930) as well as to the *Crop Report* (January 1932, pages 77 to 79; July 1932, page 502; March 1934, page 231; December 1934, page 696).
²⁾ Revised index-numbers due to the Wheat-Act payments and, from September 1934, the Cattle Emergency Act-payments.
³⁾ Calculated by the *Statist*, reduced to base-year 1913 = 100.

DESCRIPTION	Feb.	Jan.	Dec.	Nov.	Oct.	Sept.	Feb.	Feb.	Year	
	1935	1935	1934	1934	1934	1934	1934	1933	1934	1933
United States										
(Bureau of Agricultural Economics)										
Average 1909-10 to 1913-14 = 100.										
Cereals	114	115	116	109	109	112	79	34	93	61
Cotton and cottonseed	108	108	109	107	107	110	93	44	99	64
Fruits	90	87	85	94	98	93	87	64	100	74
Truck crops (market garden crops)	188	117	130	107	110	110	101	96	102	105
Meat animals	105	96	73	72	74	82	65	53	68	60
Dairy products	121	112	107	105	100	99	92	74	96	82
Chickens and eggs	119	114	119	125	108	104	78	60	89	75
Miscellaneous	101	111	113	123	137	129	98	54	108	83
Total agricultural products	111	107	101	101	102	103	83	55	90	70
Commodities purchased 1)	127	126	126	126	126	126	119	101	122	109
Agricultural wages 1)	—	86	—	—	93	—	2) 81	2) 74	88	80
United States										
(Bureau of Labor)										
1926 = 100.										
Cereals	87.4	88.8	91.5	87.2	85.0	88.1	63.2	32.7	74.5	53.1
Livestock and poultry	78.4	73.3	57.2	54.0	55.3	64.1	48.2	40.1	51.5	43.4
Other farm products	76.8	76.6	75.1	75.8	75.4	74.4	68.3	44.2	70.5	55.8
Total agricultural products	79.1	77.6	72.0	70.8	70.6	73.4	61.3	40.9	65.3	51.4
Agricultural implements	93.6	92.7	92.7	91.9	92.0	92.0	85.2	83.1	89.6	83.5
Fertilizer materials	66.2	66.5	65.3	64.6	65.7	66.4	69.2	61.5	67.1	65.9
Mixed fertilizers	72.8	73.3	75.4	73.5	73.0	73.0	72.5	62.4	72.5	64.5
Cattle feed	109.0	116.2	123.1	108.2	97.6	100.7	73.4	40.6	89.4	57.9
Non-agricultural commodities	79.4	78.9	77.8	77.7	77.6	78.4	76.1	63.7	76.9	69.0
Wholesale products in general	79.5	78.8	76.9	76.5	76.5	77.6	73.6	59.8	74.9	65.9
Finland										
(Central Bureau of Statistics)										
1926 = 100.										
Cereals		80	79	78	81	86	82	91	82	88
Potatoes	81	68	56	56	51	51	47	91	49	77
Fodder	63	64	64	64	63	61	81	71	72	72
Meat	78	76	73	70	70	74	68	66	71	64
Dairy products	80	82	86	88	80	76	68	69	75	75
Total agricultural products	76	75	76	76	74	74	72	74	73	74
Wholesale products in general	90	90	90	90	90	90	90		90	89
Hungary										
(Central Bureau Statistics)										
1913 = 100.										
Agricultural and livestock products	75	75	72	71	70	71	59	72	—	—
Wholesale products in general	86	86	84	83	82	83	74	83	—	—
Italy										
(Consiglio Provinciale dell'Economia Corporativa di Milano)										
1913 = 100.										
National agricultural products	317.9	315.6	316.2	314.9	313.4	308.8	280.5	303.6	297.9	280.7
Wholesale products in general	281.5	280.2	279.2	277.2	276.4	275.5	276.6	292.6	275.8	283.4
New Zealand										
(Census and Statistics Office)										
Average 1909-13 = 100.										
Dairy products	87.6	77.8	78.3	76.3	75.1	84.0	73.8	83.3	77.5	84.0
Meat	163.7	162.5	163.6	147.6	151.8	153.4	145.8	119.2	152.2	120.7
Wool	78.1	79.5	75.0	73.4	104.1	104.1	144.1	64.3	110.0	69.8
Other pastoral products	79.9	76.1	77.9	81.7	77.1	80.4	89.5	58.9	80.2	74.5
All pastoral and dairy products	105.2	100.4	98.9	93.9	101.7	106.2	110.3	85.1	104.5	88.4
Field products	123.7	126.3	121.5	121.4	120.4	123.1	116.8	114.7	120.6	115.8
Total agricultural products	105.7	101.2	99.3	94.4	102.0	106.4	109.2	85.9	104.7	89.2

DESCRIPTION	Feb.	Jan.	Dec.	Nov.	Oct.	Sept.	Feb.	Feb.	Year	
	1935	1935	1934	1934	1934	1934	1934	1933		
									1933-34	1932-33
Norway										
(Kegl. Selskap for Norges Vel)										
Average 1909-14 = 100.										
eals	144	141	137	136	139	141	103	119	112	120
atoes.	144	132	115	111	117	97	95	81	103	101
k.	89	88	88	89	87	86	77	90	81	91
er meat.	139	141	136	129	137	149	113	107	110	109
s.	93	82	109	129	129	101	77	103	85	93
ry products.	133	133	133	132	132	132	130	118	126	124
Concentrated feeding stuffs	118	120	121	120	117	112	97	101	96	104
Maize.	108	110	110	110	114	111	85	90	83	90
Fertilizers.	76	74	74	72	72	80	87	92	87	89
Netherlands										
(Bureau of Agriculture)										
Average 1924-25 to 1928-29 = 100.										
ant products.	54	54	55	58	62	68	62	41	59	42
vestock products.	48	49	49	48	48	50	52	50	53	51
Total agricultural products.	49	50	51	51	52	55	55	47	55	49
Agricultural wages	71	71	71	71	71	71	74	83	74	81
Wholesale products in general 1). . . .	52.1	52.8	52.8	52.1	52.1	52.1	54.1	50.1	52.8	50.1
Poland										
(Central Bureau of Statistics)										
1928 = 100.										
Raw plant products	33.7	33.1	33.2	32.3	35.6	37.2	34.7	44.2	35.6	41.1
Meat animals.	29.9	29.5	32.5	33.9	34.8	35.1	40.8	40.9	36.7	42.5
Dairy products and eggs	39.0	40.4	43.3	47.1	39.8	36.5	45.8	46.6	41.2	46.7
Products directly sold by farmers . .	33.5	33.3	34.8	35.6	36.1	36.4	38.8	43.6	37.0	42.6
Flour and groats.	38.3	38.3	38.8	38.4	40.2	41.1	38.1	54.8	38.8	47.8
Meat and lardfat.	33.4	34.9	36.7	38.2	40.2	44.4	46.0	47.0	43.5	49.8
Sugar, alcohol, beer	79.3	85.6	85.6	85.6	85.5	85.5	90.2	90.4	88.6	90.3
Products of agricultural industries .	50.0	52.6	53.4	53.8	55.0	56.8	57.9	63.7	56.7	62.4
Total agricultural products.	41.6	42.8	44.0	44.6	45.5	46.5	48.2	53.5	46.8	52.4
Commodities purchased.	68.3	68.4	68.5	68.3	68.8	69.0	72.7	74.6	70.7	72.9
Wholesale products in general.	52.2	52.9	53.5	53.6	54.4	54.0	57.6	60.4	55.7	59.1
Yugoslavia										
(National Bank of the Kingdom of Yugoslavia)										
1926 = 100.										
Plant products.	60.9	62.9	57.9	59.1	58.8	61.2	54.4	65.5	57.4	57.2
Livestock products.	57.1	58.6	55.8	55.6	58.4	54.6	57.0	60.1	55.4	57.1
Industrial products	66.0	65.4	64.9	65.3	66.0	65.6	69.1	73.0	67.4	70.8
Wholesale products in general.	63.9	64.4	62.3	62.7	63.6	63.2	63.6	68.4	63.2	64.4

1) Calculated by the the Central Statistical Bureau of the Netherlands, reduced to the base 1925-1929 = 100 — 2) Calendar year.

RECIPROCAL PARITIES OF THE VARIOUS CURRENCIES IN WHICH ARE QUOTED THE PRICES IN THE MONTHLY AND THE QUARTERLY PRICE REVIEWS (1)

COUNTRIES	Unit of Currency	Germany	Argentina	Belgium	Canada (2)	Denmark	Sweden	Egypt	Spain Switzerland	United States (3)	France Indo-China (4)	Great Britain	Hungary	India	Italy	Japan	Netherlands	Poland	Rumania	Czechoslo- vakia
Germany	Reichsmark	1.000	0.561	8.566	0.238	0.889	0.889	4.819	1.235	0.403	6.080	0.979	1.362	0.653	4.526	0.478	0.593	2.123	39.825	9.648
Argentina	Paper peso	1.782	1.000	15.263	0.424	1.584	1.584	8.586	2.200	0.718	10.833	1.744	2.427	1.163	8.064	0.851	1.056	3.872	70.959	17.191
Belgium	Franc	0.117	0.065	1.000	0.028	0.104	0.104	0.563	0.145	0.097	0.710	0.114	0.159	0.076	0.528	0.056	0.069	0.248	4.649	1.127
Canada	Dollar (2)	4.198	2.356	35.959	1.000	3.731	20.230	5.183	1.693	25.524	4.110	4.110	5.718	2.740	19.000	2.006	2.488	8.914	167.181	40.501
Denmark/Sweden	Crown	1.125	0.631	9.637	0.268	1.000	5.422	1.389	0.454	6.840	1.101	1.101	1.532	0.734	5.092	0.538	0.667	2.389	44.803	10.854
Egypt	Piastre	0.207	0.116	1.777	0.049	0.184	1.000	0.256	0.083	1.262	0.203	0.203	0.283	0.135	0.939	0.099	0.123	0.441	8.264	2.002
Spain/Switzerland	Peseta/Fr.	0.810	0.455	6.938	0.193	0.720	3.903	1.000	0.327	4.925	0.793	1.103	1.103	0.529	3.666	0.387	0.480	1.720	32.258	7.815
United States	Dollar (3)	2.479	1.391	21.237	0.591	2.204	11.948	3.061	1.000	15.074	2.427	3.377	3.377	1.618	11.221	1.185	1.469	5.265	98.737	23.920
France/Indo-China (4)	Franc	0.164	0.092	1.409	0.039	0.146	0.793	0.203	0.066	1.000	1.000	0.161	0.224	0.107	0.744	0.079	0.097	0.349	6.550	1.587
Great Britain	Shilling	1.021	0.573	8.750	0.243	0.908	4.923	1.261	0.411	6.211	1.000	1.000	1.391	0.667	4.623	0.488	0.605	2.169	40.680	9.856
Hungary	Fengö	0.734	0.412	6.289	0.175	0.653	3.580	0.905	0.296	4.464	0.720	1.000	1.000	0.479	3.323	0.351	0.435	1.559	29.240	7.084
India	Rupce	1.532	0.860	13.125	0.365	1.362	7.384	1.892	0.618	9.316	1.500	1.500	2.087	1.000	6.935	0.732	0.908	3.254	61.020	14.783
Italy	Lira	0.221	0.124	1.892	0.053	0.196	1.065	0.273	0.090	1.343	0.216	0.216	0.301	0.144	1.000	0.106	0.131	0.469	8.799	2.131
Japan	Yen	2.092	1.174	17.924	0.498	1.860	10.084	2.583	0.843	12.723	2.049	2.850	2.850	1.366	9.471	1.000	1.240	4.443	83.333	20.189
Netherlands	Florin	1.687	0.947	14.454	0.402	1.450	8.132	2.083	0.681	10.260	1.652	2.298	2.298	1.101	7.637	0.806	1.000	3.383	67.200	16.280
Poland	Zloty	0.471	0.264	4.034	0.112	0.419	2.269	0.581	0.190	2.863	0.461	0.641	0.641	0.307	2.131	0.225	0.279	1.000	18.755	4.543
Rumania	Leu	0.025	0.014	0.215	0.006	0.022	0.121	0.031	0.016	0.153	0.025	0.034	0.034	0.016	0.114	0.012	0.015	0.053	1.000	0.242
Czechoslovakia	Crown (5)	0.103	0.058	0.887	0.025	0.092	0.499	0.128	0.042	0.630	0.102	0.102	0.141	0.067	0.469	0.049	0.062	0.220	4.127	1.000

(1) Each figure gives the equivalent in the currency of the country indicated at the head of the respective column of the currency unit indicated at the beginning of the respective line. — (2) Till 31 January 1934 also parity of the United States. — (3) New parity as from 31 January 1934. — (4) 1 Gold piastre equals 10 francs. — (5) From 17 February 1934 the crown represents only 1/4 of its previous gold value.

MONTHLY CROP REPORT AND AGRICULTURAL STATISTICS

The following explanations refer to crop conditions quoted in the crop notes and in the tables. — Crop condition according to the system of the country: Germany, Austria, Hungary, Luxemburg and Czechoslovakia: 1 = excellent, 2 = good, 3 = average, 4 = bad, 5 = very bad; France: 100 = excellent, 70 = good, 60 = fairly good, 50 = average, 30 = bad; Lithuania, Poland and Sweden: 5 = excellent, 4 = good, 3 = average, 2 = bad, 1 = very bad; Netherlands: 90 = excellent, 70 = good, 60 = fairly good, 50 = below average; U. S. S. R.: 5 = good, 4 = above the average, 3 = average, 2 = below average, 1 = bad; Canada: 100 = crop condition promising a yield equivalent to the average yield of a long series of years; United States: 100 = crop condition which promises a normal yield; Egypt: 100 = from June 1934, crop condition which promises a yield equal to the average yield of the last five years. — For other countries the system of the Institute is employed: 100 = crop condition which promises a yield equal to the average of the last ten years.

WHEAT

Since the revision, made last month, of the situation of world wheat supplies and requirements in the current season, final figures have now reached the Institute showing the crops of Norway, Poland, Cyprus and Tunisia. The necessary rectifications are slight except in the case of Poland which increased its September estimate from 63.5 to 76.4 million bushels or an increase of 20 % on the preliminary figure. The 1934 Polish wheat crop, instead of being mediocre as the first estimate indicated, proves to be a large crop, surpassing the average of the years 1928 to 1932 by 12 %. In Tunisia, on the other hand, the most recent estimate shows a decrease of 1.5 million bushels on nearly 10 % on the December figure. Notwithstanding these changes, which cancel out to some extent though they result, taken altogether, in a slight increase in the exportable surplus and end of season stocks, the statistical situation of exportable supplies and import requirements remains in its general lines, without significant modification.

World net exports of wheat (including flour in terms of wheat)
(Million bushels)

Months	1934-35	1933-34	1932-33	1931-32	1930-31	1929-30
August	51	45	41	66	77	71
September	41	51	48	78	74	57
October	50	46	62	74	84	60
November	43	41	54	67	77	51
December	37	51	60	64	59	50
January	42	48	62	62	54	48
February	41	44	64	73	70	45
March	—	50	64	74	67	50
April	—	35	40	70	62	42
May	—	44	52	67	81	50
June	—	45	42	59	67	51
July	—	46	44	45	52	53
Total August-February . . .	305	326	391	484	495	382
Total March-July . . . . .	...	220	242	315	329	246
Total Season 1)	570	546	633	799	824	628

1) Estimate March, 1935.

The volume of international trade during February, official figures of which are now available and which is set out in the preceding table, was barely maintained at the level of recent months and was slightly smaller than that recorded in February last year. World exports of wheat in the first seven months of the year, that is, from 1 August to 28 February 1935, were 305 million bushels, a decline of 21 millions on the corresponding period of last year. The total for the whole year having been forecast at 570 million bushels it appears that monthly exports from March to August 1935 would have to reach an average of 53 million bushels per month as against the average of nearly 44 millions actually exported during the first seven months of the year. Thus, instead of a slackening in world wheat movements, which is a normal seasonal phenomenon in the last part of the year, an appreciable recovery in demand would have to occur. The situation of internal supplies in several importing countries appears to justify this expectation.

It is to be observed that the figures given in the table show the net world exports of all the countries normally considered as exporters. If some of these countries, instead of exporting become on balance importers of wheat, as in the case of the United States this year, the net amounts imported are deducted from the total exports of the other exporting countries. Moreover, these figures take no account of net exports from countries which are normally importers (e. g. France, which, on balance, is an exporter this year), the figures of which are deducted in turn from the total net imports of the European importing countries. The figures which appear as totals are consequently somewhat smaller than those which would be obtained by adding together net exports on the one hand and net imports on the other, without distinguishing between the exporting group and the importing group.

Net imports of wheat into Europe (including flour in terms of wheat).

(Million bushels)

Months	Season 1934-35			Season 1933-34		
	United Kingdom and Irish Free State	Other European countries	Total Europe	United Kingdom and Irish Free State	Other European Countries	Total Europe
August	18	14	32	19	15	34
September	20	16	36	22	13	35
October	18	13	31	23	14	37
November	17	12	29	22	13	35
December	20	12	32	18	10	28
January	12	10	22	14	10	24
February	16	10	26	16	11	27
March	—	—	—	22	15	37
April	—	—	—	21	13	34
May	—	—	—	20	14	34
June	—	—	—	19	14	33
July	—	—	—	21	14	35
Total August-February . . .	121	87	208	134	86	220
Total March-July . . . . .	...	...	...	103	70	173
Total season	1) 225	1) 165	1) 390	237	156	393

1) Estimate March 1935.

The imports recorded in February by the European importing countries show a slight increase on those of January, but they are smaller than the figures for February 1934. In the first seven months of the year net imports were hardly 208 million bushels of the 390 millions estimated for the whole year ending in July. To reach this total, imports during the period from March to July 1935 would have to amount to a monthly average of about 36 million bushels per month, which would be appreciably higher than that of 30 millions recorded during the first seven months. We are inclined to believe that the brisker demand which we anticipate in the second part of this year will allow the total forecast for the importing countries of Europe to be reached with ease.

* * *

So far as the standing crops are concerned, the information available at present on the area cultivated and on the condition of the crops may be summarised as follows.

Statistics of winter wheat sowings are still incomplete and, for the most part, provisional. However they give some rather interesting rough indications. 16 of the 28 European countries have issued estimates of the acreage cultivated in 1935. As these include the chief wheat producers of the Continent, the total represents more than four fifths of the wheat area of Europe. The total area cultivated in these 16 countries is in the neighbourhood of 66.2 million acres, an increase of 1.5 million acres on last year's figure. The greater part of this expansion is accounted for by about 1.2 million acres in the group of European exporters (the four Danubian countries, Poland and Lithuania). Figures for five of the countries in this group are known but Hungary has not as yet issued an estimate. Of this group, Bulgaria only reports a reduction in sowings but it is very slight. The remaining four report increases, considerable in the case of Romania and small in the case of the others. In the importing group, France, Greece, Italy, Czechoslovakia show increases though slight while only Germany records a reduction.

There is no reason to expect appreciable changes in the acreage sown last autumn in those countries which have not yet communicated their estimates, the most important of these being the United Kingdom, Hungary and Portugal. Consequently it may be pointed out that the increase of 1.5 million acres in the total for the 16 countries which have supplied estimates of their sowings indicates approximately the change that has occurred in the winter wheat crops this year compared with last year in all European countries.

As the loss of sowings experienced during the winter is as usual small and the changes which may occur in the area sown to spring wheat are very slight, the latter crop being of small importance in Europe, it is probable that the total wheat area to be harvested this summer will exceed that of last year by at least 1.3 million acres and will thus reach, and probably exceed by a slight figure, the 1933 record area of 77.9 million acres. This area would yield a crop of about 1,530 million bushels if the average yield of the last ten years is assumed and one of about 1,580 million, if the average yield of the last five years is taken

as a basis for calculation. Therefore, unless weather conditions in the period from April to July are more unfavourable than usual, the 1935 crop would thus be at least about equal in volume to that harvested last year which amounted to 1,522 million bushels.

The winter wheat area cultivated in the U. S. S. R. has been increased by about 2 million acres, but the loss of sowings caused by winter damage appears to be unusually serious this year, particularly as there were severe late frosts in the southern parts of the country in the second half of March when the crops were without the protection of a snow cover.

In the United States also, where winter sowings had increased by 2.5 million acres on 1934, the unfavourable winter weather and the drought in the western portion of the Great Plains have resulted in more damage than usual.

India announces a decrease of about 1 million acres, while in North Africa no changes of substantial magnitude seem to have occurred in the wheat area.

To conclude, notwithstanding the increases in winter sowings in Europe, the United States and the U. R. R. S., the area of winter wheat to be harvested in the coming summer does not show in the producing countries of the northern hemisphere taken as a whole any substantial changes from that of last year.

No general opinion, even of a roughly approximate kind, can be formed at present on the area of spring wheat sowings which are now in progress in the northern hemisphere nor on those of Argentina and Australia which will be made in May and June. The recent rise in prices which occurred at seeding time in Canada has made the contraction in sowings, which a month ago seemed likely, much less probable. It was estimated in the United States on the basis of an enquiry into farmers' sowing intentions that the area of spring wheat to be harvested in 1935 would be 17.8 million acres. This figure indicates a decline of 700,000 acres from the area sown in 1934 but it appears to be nearly twice as large when compared with the estimate of the area on which the harvest was carried out last year and which, as a result of the exceptional drought damage, was greatly reduced. It is quite probable that, as a result either of the trend of prices in the last few weeks or of the rather unfavourable outlook of the winter wheat crop in the western Great Plains, farmers will be induced to revise their plans and to sow a larger area to spring wheat than that anticipated in March.

In Argentina and Australia there are complaints in some places of drought which has hindered field work but rains were received in recent weeks and the position of preparatory work for the coming sowings showed a considerable improvement.

In Europe the season has continued favourable to crops in the ground during March and also during the first part of April. Weather was generally changeable in most districts, rather cold and wet in the second half of March, and mild and rather dry in the first half of April. The wheat crops do not appear, on the whole, to have suffered during the winter. The condition of standing crops in the middle of April was satisfactory and better, in several countries, than it was at the same time a year ago. There are rather frequent cases of yellow or thin wheat and there have been many complaints of drought, excessive rain or weeds in several places, but in no case does there appear to be serious loss exceeding

the normal seasonal damage. On the whole, therefore, the crops are entering the most critical period of vegetation in good condition.

The first estimate of the production of winter wheat in the United States based on crop condition at the beginning of April indicates a production of 435 million bushels which would be only slightly larger than the very poor output of last year. This forecast is naturally liable to appreciable modifications depending on the more or less favourable course of the season up to the harvest. Last year the crop was estimated at 1 April at 492 million bushels, but the final estimate made at the end of an unfavourable year was only 405 millions. This year the crops did not improve in condition in the first half of April, the drought having persisted in important areas which had for a long time been suffering from lack of moisture.

The crop in India is plentiful in spite of a reduction in the area cultivated. It would have been larger had rains, hail and the cold of the last few weeks not inflicted damage and hindered ripening. The first estimate, which arrived at the Institute on 25 April, indicates a crop greater than both that of last year and the average.

Production of wheat in India.

YEAR OF PRODUCTION	FIRST ESTIMATE		FINAL ESTIMATE	
	Punjab	India	Punjab	India
	000 bushels	000 bushels	000 bushels	000 bushels
1935	132,459	378,896		
1934	130,853	370,757	122,603	349,365
1933	109,947	340,667	121,520	352,762
1932	125,216	347,648	117,675	336,896
1931	135,445	346,789	132,907	347,387
1930	146,421	368,293	157,099	390,843
1929	115,285	307,365	127,792	320,731
1928	123,573	331,147	103,189	290,864
1927	117,040	324,875	128,091	334,992
1926	108,192	320,395	126,261	324,651
1925	109,275	321,963	111,291	330,997

If this estimate of the crop is confirmed India will have supplies in excess of its normal requirements and, in this event, will be able to place part of its surplus on the external market, if the level of international prices is favourable.

Crop prospects in North Africa show variations. A production slightly above the average is expected in Egypt, whilst in the French territories, especially in Morocco and in the western part of Algeria, crop condition which has been affected by the drought, promises at best only a mediocre output.

G. CAPONE.

CEREALS

Germany: In the main, the winter was mild. Cold spells were recorded only in the first three months of this year.

In some places it is considered that insufficient moisture has been received during the month.

Late sowings were made in favourable conditions and developed well during the winter.

Crop condition of winter cereals at the beginning of April 1935 was, on the whole, more satisfactory than it was at the same date last year.

Preparatory work for spring sowings, as a result of the fine weather of March, is generally well advanced.

Crop condition of spelt was 2.3 at the beginning of April against 2.2 on 1 December and 2.7 on 1 April 1934.

Belgium: March was fine and dry, with some frosts at the beginning of the month. Crops had in general a good appearance. Winter cereals were vigorous. The fine weather allowed work to be carried out in better conditions. Oats were sown in Lower and Middle Belgium and a beginning was made in the Ardennes.

The area destined for the cultivation of spelt during the 1934-35 is calculated at 39,500 acres, against 34,600 acres during 1933-34 and 39,900 on the average during the preceding five years. The corresponding percentages are 114.3 and 99.1. The figures for meslin are respectively: 12,400 acres, 7,400 acres and 10,300 acres; percentages: 166.7 and 120.5.

Bulgaria: Weather was variable during March. The cold weather of the first half of the month was followed by fine weather lasting nearly a week. At the end of the month the cold returned accompanied by snow and rain.

Notwithstanding these conditions, winter cereals have not suffered damage.

Sowing of spring cereals is continuing. The development of the early spring crops is rather slow.

Estonia: Temperatures at the beginning of March were lower than at the end of February and they rose above zero only in the middle of the month. It is probable that the night frosts have caused some damage to winter crops.

Irish Free State: The weather during the greater part of the month was dry and mild. Rain fell at wide intervals. Winter crops have done excellently and look promising.

Sowings of spring wheat were practically completed while those of oats and barley began during the month in satisfactory climatic and soil conditions.

France: After falling to a very low point during the second week of March, temperature rose in the middle of the month and spring conditions prevailed favouring sprouting. Fine weather continued up to the end of March and the conditions were favourable to crops, field work and spring sowings. At the end of the month and in the first decade of April weather was changeable, but rather cold and wet in most parts with the exception of the west and south-west where rainfall was slight.

The wheat crop does not appear, on the whole, to have been adversely affected during the winter. The general appearance on 10 April was satisfactory and better than at the beginning of March. There was, however, some yellow and poor wheat in the central plains and too forward growth in the north and west, where there were, in addition, complaints of drought. Weeds were rather plentiful in some areas in the north and west but the fine weather facilitated clearing. The outlook on 10 April was good in the south and south-west and fairly good in the west, the Paris Basin, the north and east. On the whole, it suggested a crop better than the average but smaller than that of last year. The wet winter will probably affect yields but it is not clear at present to what extent.

Sowings were held up by the bad weather which impeded work up to the middle of March, but in the second half of March and during the first week of April they preceded in good or very good conditions. Sowings of oats were nearly finished by the middle of April.

Area and Crop Condition.

COUNTRIES	AREA SOWN				CROP CONDITION (†)									
	1935	1934	Average 1929 to 1933	% 1935										
				1934 = 100	Aver. = 100	1-IV-1935			1-XII-1934			1-IV-1934		
						Thousand acres		a)	b)	c)	a)	b)	c)	a)	b)	c)
WINTER WHEAT														
Germany	4,609	4,927	4,435	93.5	103.9	2.4	—	—	2.3	—	—	2.9	—	—
*Austria . . . . .	...	548	502	...	...	2.0	—	—	2.1	—	—	2.6	—	—
Belgium	381	379	396	100.3	96.1	—	—	—	—	—	—	—	—	—
Bulgaria	3,010	3,024	2,964	99.5	101.6	—	—	—	—	—	—	—	—	—
Spain	11,063	11,039	11,084	100.2	99.8	—	—	—	—	—	—	—	—	—
Finland	56	45	31	109.8	181.4	—	—	—	—	—	—	—	—	—
France 1)	13,007	12,771	12,474	101.9	104.3	—	—	—	7) 75	—	—	—	—	—
Greece	2,020	1,987 3)	1,468	101.7	—	—	—	—	—	—	—	—	—	—
Italy	12,166	12,031	12,079	101.1	100.7	—	—	—	—	—	—	—	—	—
Latvia	207	210	146	99.0	142.3	—	—	—	—	—	—	—	—	—
Lithuania	425	403	370	105.5	115.1	—	—	—	—	—	—	—	—	—
Luxemburg	39	39	26	100.0	150.4	—	—	—	—	—	—	—	—	—
Poland	3,794	3,776	3,763	100.5	100.8	1) 3.2	—	—	1) 3.7	—	—	1) 3.1	—	—
Romania	7,858	6,324	6,899	115.1	113.9	e) 2.0	—	—	—	—	—	—	—	—
*Switzerland . . . . .	...	127	...	...	...	—	100	—	—	—	—	—	—	96
Czechoslovakia	2,212	2,099	1,993	105.4	111.0	—	—	—	—	—	—	—	—	—
Yugoslavia	5,345	5,208	5,184	102.6	103.1	—	—	—	—	—	—	—	—	—
Total Europe	66,192	64,762	63,312	102.2	104.5	—	—	—	—	—	—	—	—	—
U. S. S. R.	31,836	29,893	24,987	106.5	127.4	—	—	—	—	—	—	—	—	—
Canada	663	698	730	95.0	90.8	—	—	—	1) 105	—	—	—	—	—
United States (w) (s) 6) 17,847 3) 9,290 3) 19,841	44,306	41,850	43,816	105.9	101.1	—	—	69.8	—	—	77.8	—	—	74.3
Total America	62,816	51,838	64,387	121.2	97.6	—	—	—	—	—	—	—	—	—
India 7)	33,950	35,019	31,952	96.9	106.3	—	—	—	—	—	—	—	—	—
Japan . . . . .	...	1,589	1,280	...	...	c) 100	—	—	—	—	—	—	—	g)
Syria and Lebanon	1,279	1,175	1,170	108.8	109.3	—	—	—	—	—	—	—	—	—
Total Asia	35,229	36,194	33,122	97.3	106.4	—	—	—	—	—	—	—	—	—
Algeria	4,016	4,065	3,839	98.8	104.6	—	—	—	—	—	—	—	—	—
Egypt	1,439	1,442	1,595	99.8	90.2	102	—	—	1) 100	—	—	—	—	90
French Morocco	3,163	3,018	2,885	104.8	109.6	—	—	—	—	—	—	—	—	—
Tunisia	1,816	1,903	1,952	95.5	93.1	—	—	—	—	—	—	—	—	—
Total Africa	10,434	10,428	10,271	100.1	101.6	—	—	—	—	—	—	—	—	—
GRAND TOTAL \$) (m) 174,671 163,222 171,092 107.0 102.1	174,671	163,222	171,092	107.0	102.1	—	—	—	—	—	—	—	—	—
(n) 206,507 193,115 196,079 106.9 105.3	206,507	193,115	196,079	106.9	105.3	—	—	—	—	—	—	—	—	—
WINTER RYE														
Germany	10,670	10,980	11,081	97.2	96.3	2.5	—	—	2.3	—	—	2.7	—	—
*Austria . . . . .	...	909	897	...	...	1.9	—	—	1.9	—	—	2.8	—	—
Belgium	526	544	561	96.7	93.8	—	—	—	—	—	—	—	—	—
Bulgaria	455	451	536	101.0	84.9	—	—	—	—	—	—	—	—	—
Spain	1,401	1,451	1,512	96.6	92.7	—	—	—	—	—	—	—	—	—
Finland	628	575	532	103.6	118.0	—	—	—	—	—	—	—	—	—
France 1)	1,607	1,659	1,862	96.8	86.3	—	—	—	7) 76	—	—	—	—	—
Greece	185	204 3)	162	90.4	—	—	—	—	—	—	—	—	—	—
Latvia	647	654 8)	608	99.0	106.5	—	—	—	—	—	—	—	—	—
Lithuania	1,260	1,216	1,198	103.6	105.2	—	—	—	—	—	—	—	—	—

COUNTRIES	AREA SOWN					CROP CONDITION (†)								
	1935	1934	Average 1929 to 1933	% 1935										
				1934 = 100	Aver. = 100	I-IV-1935			I-XII-1934			I-IV-1934		
						Thousand acres			a)	b)	c)	a)	b)	c)
Luxemburg	19	19	19	100.0	101.5	1.9	—	—	—	—	—	2.3	—	—
Poland	14,101	13,952	14,211	101.0	99.2 ^{a)}	3.3	—	—	^{a)} 3.9	—	—	^{a)} 3.2	—	—
Romania	951	886	872	107.4	109.1	^{e)}	—	—	—	—	—	—	—	—
*Switzerland	35	35	47	100.0	103	—	—	—	—	—	—	—	—	97
Czechoslovakia . . .	2,428	2,415	2,530	100.6	96.0	—	—	—	—	—	—	—	—	—
Yugoslavia	544	537	516	101.2	105.4	—	—	—	—	—	—	—	—	—
Total Europe . . .	35,422	35,543	36,200	99.7	97.8	—	—	—	—	—	—	—	—	—
U. S. S. R.	58,519	60,975	64,626	96.0	90.5	—	—	—	—	—	—	—	—	—
Canada	631	680	718	92.8	87.9	—	—	—	—	—	^{b)} 91	—	—	—
United States . . .	5,697	5,027	5,046	113.3	112.9	—	—	76.4	—	—	80.4	—	—	63.8
Total America . . .	6,328	5,707	5,764	110.9	109.8	—	—	—	—	—	—	—	—	—
GRAND TOTAL. { ^{m)} {n)	41,750 100,269	41,250 102,225	41,964 106,590	101.2 98.1	99.5 94.1	—	—	—	—	—	—	—	—	—
WINTER BARLEY														
Germany	845	780	554	108.3	152.5	2.5	—	—	2.4	—	—	2.8	—	—
*Austria	19	19	19	100.0	111.9	2.2	—	—	2.0	—	—	2.7	—	—
Belgium	79	82	71	97.0	111.9	—	—	—	—	—	—	—	—	—
Bulgaria	429	438	463	97.9	92.6	—	—	—	—	—	—	—	—	—
Spain	4,536	4,502	4,629	100.8	98.0	—	—	—	—	—	—	—	—	—
France 1)	449	494	434	91.0	103.5	—	—	—	^{b)} 75	—	—	—	—	—
Greece	544	589 3)	505	92.5	—	—	—	—	—	—	—	—	—	—
Luxemburg	9)	9)	1	100.0	79.4	2.1	—	—	—	—	—	2.5	—	—
Romania	227	199	231	114.0	98.3	^{e)}	—	—	—	—	—	—	—	—
*Switzerland	14	14	18	100.0	100	—	—	—	—	—	—	—	—	98
Czechoslovakia . . .	12	11	17	104.4	71.4	—	—	—	—	—	—	—	—	—
Yugoslavia	593	596	617	99.5	96.0	—	—	—	—	—	—	—	—	—
Total Europe . . .	7,714	7,691	7,522	100.4	102.6	—	—	—	—	—	—	—	—	—
United States s) . .	6) 11,954 3)	7,144 3)	12,194	167.3	98.0	—	—	—	—	—	—	—	—	—
*Japan	1,860	2,088	111.2	83.9	^{e)}	—	—	—	—	—	—	—	—	s)
Syria and Lebanon . .	680	611	810	111.2	83.9	—	—	—	—	—	—	—	—	—
Total Asia	680	611	810	111.2	83.9	—	—	—	—	—	—	—	—	—
Algeria	2,965	3,131	3,431	94.7	86.4	—	—	—	—	—	—	—	—	90
Egypt	275	284	342	96.7	80.5	105	—	—	^{b)} 100	—	—	—	—	—
French Morocco . . .	3,954	3,844	3,344	102.9	118.2	—	—	—	—	—	—	—	—	—
Tunisia	1,532	988	1,221	155.0	125.4	—	—	—	—	—	—	—	—	—
Total Africa	8,726	8,247	8,338	105.8	104.7	—	—	—	—	—	—	—	—	—
GRAND TOTAL §) . .	29,074	23,693	28,864	122.7	100.7	—	—	—	—	—	—	—	—	—

COUNTRIES	AREA SOWN					CROP CONDITION (†)								
	1935	1934	Average 1929 to 1933	% 1935										
				1934 = 100	Aver. = 100	I-IV-1935			I-XII-1934			I-IV-1934		
						Thousand acres								
						a)	b)	c)	a)	b)	c)	a)	b)	c)
OATS														
Spain	1,619	1,877	1,917	86.3	84.5	—	—	—	—	—	—	—	—	—
France 1) . . . w)	2,138	2,022	2,157	105.7	99.1	—	—	—	76	—	—	—	—	—
Greece	358	351	321	102.1	—	—	—	—	—	—	—	—	—	—
Luxemburg	67	67	72	100.0	92.7	2.1	—	—	—	—	—	1.7	—	—
Total Europe . . .	4,182	4,317	4,467	96.9	93.6	—	—	—	—	—	—	—	—	—
United States . .	6) 39,108	3) 30,395	3) 39,201	128.7	99.8	—	—	—	—	—	—	—	—	—
Syria and Lebanon	30	32	29	93.4	104.4	—	—	—	—	—	—	—	—	—
Algeria	457	450	554	101.6	82.5	...	...	...	—	—	—	—	—	90
French Morocco .	74	65	83	112.2	89.0	—	—	—	—	—	—	—	—	—
Tunisia	74	49	86	150.0	85.9	—	—	—	—	—	—	—	—	—
Total Africa . . .	605	564	723	107.0	83.9	—	—	—	—	—	—	—	—	—
GRAND TOTAL . .	43,925	35,308	44,420	124.4	98.9	—	—	—	—	—	—	—	—	—

(†) See explanation according to the various systems, page 253. — *) Countries not included in the totals. — §) Including spring crops of the United States. — a) Above the average. — b) Average. — c) Below the average. — d) Very good. — e) Good. — f) Average. — g) Bad. — h) Very bad. — m) Not including U. S. S. R. — n) Including U. S. S. R. — w) Winter crop. — s) Spring crop. — 1) Acreages sown up to 1 January 1935. — 2) 1 January 1935. — 3) Area harvested. — 4) Middle of the previous month. — 5) 1 November 1934. — 6) Area to be harvested, calculated on farmers' intentions on 1 March 1935. — 7) Third estimate. — 8) Average 1930 to 1933. — 9) Area inferior to 500 acres.

Great Britain and Northern Ireland: The weather during March was generally fine and warm for the time of year and in the main exceptionally favourable for agricultural operations. There were, however, one or two cold spells accompanied by easterly winds in the early part of the month, but the occasional frosts then experienced were not so severe as to cause any appreciable damage to crops. There was little rain during the month. In several north-eastern districts of Scotland the early part of the month was rather wet and cold and similar conditions were experienced during the latter half in some northern and western counties.

Although growth was checked by the cold winds and frosts experienced at the beginning of March, autumn sown crops benefited from the subsequent mild and open weather conditions. At the end of the month, the cereal crops in all parts of the country had a strong and healthy appearance.

Conditions were on the whole very favourable for spring cultivation and good progress was made. Except on heavy clay soils which have been difficult to work, a good tilth has been obtained. Spring sowing at the end of March was general and the earlier sown spring crops appear to be germinating well, although in many areas the plants are not yet above the ground.

Hungary: The weather in the four weeks from 6 March to 10 April was characterized by very variable temperatures and lack of precipitation, particularly in the eastern districts of Transdanubia. Precipitation in the form of snow occurred in the first

days of March and in the form of snow after 24 March. Cold stormy winds from the north brought a fall of snow over the whole country on 29 and 30 March. Toward 10 April sowing of spring cereals began.

Winter cereals passed through the winter very well. They are dense and in most places have a very fresh colour. The relatively low temperatures of the first decade of April hindered their development. No more important losses from frosts or field-mice are reported.

Italy: Weather during March was characterized by a temperature below normal and by drought. Conditions were on the whole rather unfavourable for cereals, the growth of which was delayed in several districts of Northern and Central Italy. In Southern Italy and the islands crop condition in some places was good or mediocre. Damage and field-mouse depredations were reported from some areas. Sowings of spring barley and oats began in the second half of the month.

Latvia: Temperature was slightly below normal during the first decade of March but during the rest of the month weather was warmer. Rainfall was slight during the first two decades and became more plentiful only during the last. The average for the month reached normal.

Lithuania: Weather during March was unfavourable to winter crops. Being no longer protected by a snow cover, the crops, particularly rye in wet peaty districts, suffered from changes in temperature.

Luxemburg: Weather was favourable to crops. In some places, autumn seedings, wheat in particular, require partial resowing. Preparatory work for spring sowings began and proceeded in good conditions.

Poland: According to information from the Central Statistical Office based on 4,040 reports from agricultural correspondents, the situation of winter cereals on 15 March 1935 was as follows.

Compared with the last estimate (middle of December 1934) the condition of winter crops has worsened appreciably, owing, in the first place, to the severe frosts of the beginning of January when the snow-cover disappeared, and to the low temperatures of March following the exceptionally warm days of the second half of February. The snow on the fields had melted at the end of February so that the cold of March endangered the winter crops. The appreciable damage resulting in the autumn from *cecidiomya* and red rust contributed to the worsening in crop condition, particularly that of rye.

Weather was changeable in the second half of March. Temperature was generally above normal, but it dropped considerably, particularly at night, on 20 March and at the end of the month. There was little rainfall in the second half of March, and plentiful rains did not fall over a considerable part of the country until the end of March and the beginning of April.

Weather during the first half of April was variable. It was cold and wet in most of the country between 4 and 10 April but warm with heavy rain and sometimes hail at the beginning of the following week after which there was a further and considerable fall in temperature. The growth of winter cereals was delayed by the frequent falls in temperature, while in some districts, especially in the south the sowings

were adversely affected by hail and excessive soil moisture. Spring sowings were in active progress in most parts of the country.

Romania: In the second half of March the weather became springlike. In consequence of the higher temperatures the snow on the hill and mountain zones melted. Precipitation was frequent between 24 and 31 March. In the last days of the month temperatures again fell but no frosts were reported on the plains. Floods were only local and caused no damage to crops.

Toward the middle of March cultivation began in the Banat, in Oltenia and in the west of Muntenia. At the beginning of April it was general save in the mountain areas. In the Danube valley work was hindered by the excessive humidity of the soil and sowings of spring cereals were in consequence delayed.

Winter cereals in general wintered well. Losses through frosts did not exceed 10-18 % in the areas that suffered most (Basarabia, Moldavia, the *Baragan* steppes of Ialomita and northern Dobrogea) while in the rest of the country the losses ranged from 3 % to 5 % of the sown area, a normal proportion.

Rust did not damage winter cereals. Field-mice caused relatively large losses in Bukovina and on the Transylvanian plateau.

Switzerland: As a result of the favourable weather of the end of the autumn, sowings grew vigorously and survived the winter in good conditions.

Autumn cereals in nearly all parts have a fresh and vigorous appearance. Only little damage resulted from the winter. The too forward rye crops have suffered to some extent. Thin wheat fields in some places have been affected by frosts.

Spring sowing work was begun in good time and good progress was made on lands which were sufficiently dry. Sowings were somewhat impeded by snow falls and bad weather.

Crop conditions of spelt and meslin on 1 April 1935, according to the system of the Institute was 104 against 97 at the same date a year ago.

Yugoslavia: Weather was rather wet and cold at the beginning of March but dry, sunny and rather warm during the remainder of the month.

Crop condition of winter cereals at the end of the month was good.

Preparatory work and sowing of spring cereals began at the end of the month.

U. S. S. R.: After a long period of cold weather in the first and second decades of March, temperature rose considerably in the third and resulted in a rapid thawing of snow first in the western and southern portions of the European territory and later in the central and eastern regions of European and Asiatic Russia. In the European territory where weather was mild up to 13 April, temperature up to 18 April was considerably lower except in the south-east and the North Caucasus where weather continued warm.

Precipitation during the second half of March and the first half of April occurred chiefly in the North Caucasus region, in Ukraina and in the central and western parts of the European territory of the Union, while weather in the south-east was dry and the land lacked humidity, a lack which was caused in part also by winds. Little precipitation was experienced also in Central Asia.

As the land was free of snow and conditions were favourable, sowings continued from south to north, and by 15 April sowings had begun everywhere except in the North Region and a part of Siberia.

The following table shows the area sown between 31 March and 15 April in the last three years:—

Area sown to all spring crops.
(Thousands of acres).

Date	1935	1934	1933
31 March	16,423	20,241	4,688
5 April	22,828	25,988	9,462
10 April	35,596	33,150	16,870
15 April	55,051	42,303	25,605

The area sown up to 15 April this year amounts to 24.5 % of the area assigned in the plan and is considerably greater than that sown up to the same date a year ago.

Official information on the condition of winter cereals and the damage suffered during the winter, at the end of February and in March when sudden changes in temperature occurred, is, however, not available. Isolated items of news referring only to some areas in the North Caucasus and Ukraina suggest that the crop condition of winter cereals is satisfactory.

Argentina: Weather during March was generally favourable to preparatory work for the coming cereal sowings.

(Telegram of 25 April) Preparatory work for the coming sowings is being done in normal conditions.

Canada: Precipitation during the winter was satisfactory and spring sowings are expected to begin soon in favourable conditions though somewhat later than usual. There is a shortage of subsoil moisture, however, and good rains during the growing period will be necessary.

United States (Telegram of 28 March): Rainfall was general in the East Central States and along the Pacific Coast but continued drought and severe dust storms were experienced in the western half of the Great Plains with consequent damage to crops, particularly wheat.

Spring sowings were in active progress except in the Ohio Valley and southward where the weather was too wet.

(Telegram of 4 April): Soil was wet in the Lower Missouri and Central Mississippi Valleys and there were low temperatures in the North-west; spring work and growth were delayed. Dryness and dust storms continued in the Great Plains and were spreading eastwards. Grain crops were good in the Ohio Valley but poor in the Western Plains.

(Telegram of 11 April): Temperature was much below normal except in the Gulf States and the South-east. The drought in the western area continued but its eastward advance halted. Beneficial rains were received in the spring wheat belt, but field work here and in the winter wheat belt was delayed by the cold.

(Telegram of 18 April): Growth of crops was retarded and planting delayed by cold and rain in the east of the Great Plains. The crops in the Western Great Plains except Montana were very poor. The drought continued and was spreading eastwards.

(Telegram of 25 April): Cool wet weather further delayed crop growth and planting, particularly to the east of the Mississippi. Beneficial rains fell in the northern

Rocky Mountains region and in Texas but the drought area centred in Kansas was unrelieved.

Crop condition of winter wheat on 1 April 1935 was 69.8 % of the normal compared with 74.3 % on 1 April 1934. Corresponding figures for winter rye were 76.4 and 63.8. The production of winter wheat in 1935 indicated by the conditions on 1 April was estimated at 435,499,000 bushels (261,299,000 centals) compared with a final estimate of 405,034,000 (243,020,000 centals) in 1934 and an average in the five years 1929 to 1933 of 572,861,000 bushels (343,717,000 centals).

Mexico: The wheat crop developed satisfactorily during January. The area sown in the northern *départements* is estimated to be 30 % smaller than last year, while in the Centre zone there is a slight increase in the wheat acreage compared with last year. Frost damage is reported from some places.

India: The wheat crop is reported to have been adversely affected in places by cold and frost. Its condition and prospects appeared to be fair.

(Telegram of 10 April): Wheat production in the Punjab, is estimated at 79,475,000 centals (132,459,000 bushels) an increase of 1.2 % on the 78,512,000 centals (130,853,000 bushels) of 1933-34 and one of 4.7 % on the average of 75,878,000 centals (126,463,000 bushels) in the five years ending 1932-33. The increase has occurred despite a decrease in area of 8.1 % on last season and one of 6.4 % on the average, the area being now estimated at 10,037,000 acres.

(Telegram of 25 April): According to the first estimate, production of wheat this year will be about 227,338,000 centals (378,896,000 bushels) against 222,454,000 (370,757,000) in 1934-35 and 205,274,000 (342,123,000) on the average of the five years ending 1933; percentages 102.2 and 110.7.

The increase in production is almost exclusively due to the favourable course of the season as the area sown to wheat is 1 million acres smaller than in 1934.

If the present forecast is confirmed it is probable that India will have a surplus of wheat in excess of its internal requirements. The volume of exports to be placed on the international market will be influenced above all by the level of prices in the coming season.

Japan: Weather at the beginning of April was favourable to winter wheat and barley.

Algeria: The first two weeks of March were characterised by fine dry weather and the drought was beginning to cause some anxiety even in central and eastern areas. Later the weather was rather wet in these zones but only a few local showers fell in the west. Fine clear and dry weather again set in at the end of the month with a fairly appreciable drop in temperature and some frosts, but without effect, in the west. Temperature rose rather quickly and April opened fine and warm.

On the whole, these conditions were very favourable to the growth of cereals in the two eastern and central areas where development was very vigorous and sometimes too forward so that fields had to be pastured or topped. Weeds are rather plentiful in damp soils, but the fine weather facilitated their removal. Crop prospects were very good at the beginning of April everywhere in these two areas. Drought persisted in the west, however, broken only by slight local showers which were quite inadequate owing to the lack of moisture in the soil. The damage recorded last month has increased, especially on heavy lands and native holdings where the crop is now to be considered as being definitely menaced. On the whole, soft wheat, which is better cultivated as most of it is grown on European holdings, has survived in better

condition while hard wheat and barley are very irregular, according to the type of soil, the time of sowing and the care devoted to the crops. The Province of Oran cultivates about 60 % of the soft wheat and oat crops, 20 % of the barley and 20 % of the hard wheat.

On the whole, taking into account the area sown, crop prospects at the beginning of April were not as good as those of last year in the case of cereals considered as a whole, better than average in the case of soft and hard wheat, and rather below average in the case of barley. Plentiful and well distributed rains in the west would improve the condition of crops in Oran, but late April frosts and, more especially, the first sirocco winds were still to be feared, particularly in Oran, where, owing to the inadequate soil moisture and the present crop condition, the harvest may be severely affected.

Estimates of the area sown in February-March would indicate a reduction in cereal crops but it must be remembered that the comparison is made between 1935 data that are quite provisional and final estimates of previous years and that, especially for wheat, the March estimate is normally much below the final estimate; the difference for wheat was more than 346,000 acres, or 9 %, in the last two years, 1934 and 1933. If the estimate of March 1934 is compared with the figures at the same date in previous years, it is found that the total area of sowings of wheat, barley and oats is slightly (1 %) above that of 1934 and 1.67 % above the average for the five years 1929-33, though comparison with the final figures would indicate decreases of 3 % and 5 % respectively. The area sown to barley would appear to be appreciably smaller than that of last year and the average, the decrease being heavier (7.7 %) with respect to 1934 and smaller (only 10 %) with respect to the average; it would appear without doubt to be the smallest area sown since 1926 inclusive. The same applies to oats. On the other hand if the March estimate of sowings (3,707,000 acres in 1934 and 3,455,000 acres on the average) are taken, the wheat crop would appear to have undergone a further appreciable extension this year, amounting to 8 % with respect to 1934 and 16 % with respect to the average; the increase with respect to 1934 would appear to be 15 % for soft wheat and 6 % for hard wheat though comparison with the final data shows a decrease of 8 % for soft wheat and an insignificant increase for hard wheat.

The improvement of agricultural statistics in the course of a year is capable of reducing the margin between the preliminary estimates of March and the final estimates. It appears, however, that, while the barley and oats crops are in appreciable regression, the areas sown to hard and soft wheat are at least equal to those of last year and much above the average; on the whole there is very probably no appreciable reduction in the cereal crop, of which the total area would remain practically the same as that of last year, though very slightly (2-3 %) below the average. In any case, even compared with the final figures of the previous years, the area sown to soft wheat is still over one-third above the average (1,050,000 acres in 1935 against 782,000 on the average, an increase of 34.4 %).

Egypt: The wheat crop is maturing in Upper Egypt and harvesting is expected to begin about the middle of April. The grains are forming elsewhere. At present the crop seems to be a little above the average.

The harvesting of the barley crop is in progress in the early areas in Upper Egypt, but is only just commencing in Middle Egypt, whereas in Lower Egypt the crop is progressing towards maturity. The crop seems to be 5 % above the average.

Kenya: During February ploughing and planting for the new cereal crop were in progress.

French Morocco: Temperature rose in March, particularly along the coast, after a considerable fall in February, but in the central area, in the Meknes district, these were further sharp frosts towards the middle of the month and spring wheat suffered in some districts. Temperature was rather above normal at the end of the month. On the other hand, only very slight rainfall was recorded during March over the whole of Morocco and the moisture reserves in the soil are not adequate everywhere to offset the consequences of the drought.

The crops, particularly those of the natives, are clearly suffering in the south (the Marrakesh, and Safi areas and those of Doukkalage in Chaouïa) where a good half of the cereal crops are grown and where yields will inevitably show the effects of these unfavourable conditions. The situation is better in the north central area (the Meknes, Fez and Taza areas), but the need for immediate rain is not less urgent. Serious attacks of *cecidiomya* were reported on the coast but it was impossible to estimate the extent of the damage.

On the whole, the drought appears to have resulted in a too rapid growth. Earing of barley was nearly complete at the end of March in the southern coastal areas (Abda, Dukkala and Chaouïa) though the stalks were not full grown, while that of the earlier sown soft wheat was proceeding in most areas and that of hard wheat was beginning. It is thought that in some central and coastal areas (Angads, Fez, Meknes, Rharrb, Abda and Marrakesh), particularly the heavy or insufficiently prepared lands and native holdings, yields are already affected. The crops on European holdings are in general in better condition, as a result of the fallow and better farming the effect of which is noticeable in times of drought. The outlook for the harvest is not very favourable.

Crop condition of all cereals in the middle of April was very mediocre. The yields expected were as follows: hard wheat, 2-3 centals per acre (3-5 bushels per acre); soft wheat, 5 (7); barley, 4-6 (7-9); and oats 5 (17). These yields would give a crop of hard wheat equal to one third of that of last year and barely half of the quinquennial average, a crop of soft wheat equal to half that of last year and only one fifth smaller than the average as a result of the expansion of this crop, and a total wheat crop 60 % smaller than the average. The barley crop would be nearly half of that of last year and smaller than the average by one third.

Tunisia: In March the rains were fairly heavy and well distributed; north-west and north-east winds blew fairly frequently and sometimes violently; temperature was normal or below normal. These conditions had an effect on crops varying with district.

In the north (Bizerta and Tunis) and in the centre the cold rains and strong drying winds retarded growth. In the north earing of soft wheats, which should take place normally at the end of March, had not yet begun and production appeared slightly smaller than that of a normal year; hard wheats were more resistant to the storms, their appearance, though late, being satisfactory and the crop appearing average. In the centre the first sowings showed satisfactory growth but late sowings had a less satisfactory appearance; on the whole the crop appeared average or fairly good according to locality. In the south, in the Sfax area, late sowings required some rain and though some crops on light lands suffered somewhat from cold and from violent winds, their condition had in general completely recovered after the storms of February; growth is very satisfactory, appearance very good and crop prospects excellent.

Given the relative areas of the various cereal crops, prospects for hard and soft wheat were somewhat below average and those for barley were excellent.

The estimates of area sown show a very great extension of the barley crop and a slight increase of that of softwheat, both attaining an absolute maximum; sowings of

hard wheat have this year, in fact, been carried out on 309,000 acres against 297,000 last year and 214,000 on the average. On the other hand the area under hard wheat has undergone a further appreciable reduction of 5 %, falling from 1,606,000 acres in 1934 to 1,507,000; it is 13 % below the five-year average of 1,737,000 acres and does not attain even the 1924-33 average of 1,594,000 acres; it is nearly 618,000 acres or 29 % below the 1932 maximum. The total area sown to cereals still, however, exceeds that of last year by 432,000 acres or 15 % and the five-year mean by 124,000 acres or 4 % but the barley crop, which is on the average scarcely 70 % of the hard wheat crop, this year occupies the same area as the latter cereal.

MAIZE

Hungary: Toward the end of the first decade of April preparations for sowing were in progress. At that date sowings had been made only here and there.

Romania: Maize sowings had begun everywhere by the end of the first decade of April except in mountainous districts.

Argentina (Telegram of 25 April): Harvesting of maize is going forward in good conditions; production and quality of the crop are considered to be fairly good.

Surinam: Crop condition of maize which was still in the fields at the end of 1934 was good. The crop of the last quarter of 1934 was satisfactory.

French Indo-China: In Tonkin the crops, favoured by the moist mild weather of February, had generally a very good appearance at the end of the month and fewer parasites were reported than usual.

In North Annam also growth was satisfactory and was particularly advanced on the banks of the streams, where earing had begun. In the centre, while sowing had begun and some early crops were in flower in the northern provinces, more to the south ripening was continuing normally and the harvest, already begun in places, appeared satisfactory. In the majority of the provinces of South Annam earing was in full swing and the crop had a normal appearance on the alluvial ground along the streams but was suffering from drought on the elevated lands; the production in Ninh-thuân was bad.

In Cambodia, which has become by far the largest producer in the Union, the area cultivated to the crop was estimated at 371,000 acres for the dry-season crop alone, which represents normally half of the total; in 1933-34 the total area, already rising very markedly, (91,000 acres on the average of 1928-29/1932-33) was only 297,000 acres; these figures demonstrate the rapid and extensive development of the crop in Cambodia, due partly to the rice crisis. The production of maize sown in November was fairly satisfactory; the crop to be harvested at the end of March and in April left more to be desired since it had suffered considerably from smut in some places.

French Morocco: March was very dry. Maize and sorghum sowings began in the north central and coastal districts. They are already well advanced in the irrigated land of the south central area (Marrakesh). A tendency is noticeable in some native areas generally to increase spring crops to make up for possible low yields of winter cereals.

Union of South Africa: Early in February general rains were reported throughout the maize belt, but a dry spell followed and although scattered showers occurred at

Maize.

COUNTRIES	AREA					PRODUCTION							
	1934	1933	Aver. 1928 to 1932	% 1934 and 1934/35		1934	1933	Average 1928 to 1932	1934	1933	Average 1928 to 1932	% 1934 and 1934.3	
	1934/ 1935	1933/ 1934	1928/ 1929 to 1932/ 1933	1933 — 1934	Aver- age	1934/35	1933/34	1928/29 to 1932/33	1934/35	1933/34	1928/29 to 1932/33	1933 — 1934	Aver- age
	1,000 acres					1,000 centals			1,000 bushels of 56 lb.				
Austria . .	160	159	148	101.0	108.1	3,303	3,011	2,667	5,897	5,377	4,763	109.7	123.8
Bulgaria . .	1,658	1,796	1,757	92.3	94.3	18,067	20,967	17,660	32,262	37,441	31,536	86.2	102.3
France . .	823	832	843	98.8	97.5	11,452	9,589	10,516	20,449	17,123	18,778	119.4	108.9
Greece . .	586	645	555	90.8	105.6	5,291	6,026	3,755	9,448	10,760	6,706	87.8	140.9
Hungary . .	2,807	2,816	2,726	99.7	103.0	46,334	39,889	37,085	82,740	71,230	66,223	116.2	124.9
Italy . . ^{s)}	3,271	3,190	3,391	102.5	96.5	64,330	52,549	50,695	114,874	93,837	90,528	122.4	126.9
Italy . . ^{f)}	384	346	252	111.1	152.3	6,059	4,564	2,733	10,820	8,151	4,880	132.7	221.7
Poland . .	223	225	231	99.0	96.3	1,670	1,232	2,090	2,982	2,200	3,732	135.5	79.9
Romania . .	12,368	11,928	11,470	103.7	107.8	106,840	100,408	113,401	190,786	179,301	202,502	106.4	94.2
Switzerland .	2	2	3	81.3	74.0	55	63	71	99	113	126	87.2	78.4
Czechoslov. .	x) 359	316	351	113.4	102.3	5,447	3,370	5,466	9,728	6,018	9,760	161.6	99.7
Yugoslavia .	6,578	6,272	5,761	104.9	114.2	113,631	78,883	76,843	202,912	140,863	137,220	144.0	147.9
Total Europe	29,219	28,527	27,488	102.4	105.3	382,479	320,551	322,982	682,997	572,414	576,754	119.3	118.4
Canada . .	161	137	143	117.9	112.7	3,807	2,830	2,997	6,798	5,054	5,351	134.5	127.0
United States	87,486	103,260	102,768	84.7	85.1	773,202	1,316,928	1,434,802	1,380,718	2,351,658	2,562,147	58.7	53.9
Cambodia . .	741	297	92	250.0	802.4	9,921	3,748	1,079	17,716	6,693	1,927	264.7	919.2
Chosen . . .	292	276	263	105.6	110.9	1,311	1,974	1,832	2,341	3,525	3,272	66.4	71.5
Syria & Leb.	61	67	76	90.9	80.0	646	573	837	1,154	1,024	1,494	112.7	77.2
Turkey . .	778	942	884	82.6	88.0	7,108	12,502	10,707	12,692	22,324	19,121	56.9	66.4
Algeria . .	25	25	23	100.7	107.9	165	127	146	295	228	260	129.7	113.4
Egypt . .	1,632	1,638	2,036	99.6	80.1	34,653	32,536	41,658	61,880	58,101	74,389	106.5	83.2
Eritrea . .	11	27	21	40.9	52.3	79	220	177	142	394	317	36.0	44.7
Kenya 3)	123	113	193	109.0	63.8	1,939	1,494	2,604	3,462	2,667	4,650	129.8	74.5
French Mo- rocco . .	986	887	714	111.0	138.1	5,425	3,096	3,171	9,688	5,528	5,663	175.3	171.1
Tunisia 4)	44	37	44	120.0	101.7	132	132	130	236	236	232	100.0	101.7
*Argentina 5)	17,372	16,097	13,714	107.9	126.7	...	130,095	170,217	...	232,314	303,960	...	...
*Un. of S. Afr.	...	3) 6,506	3) 5,847	...	...	39,160	47,802	6) 33,784	69,929	85,361	5) 60,328	81.9	115.9
TOTALS . .	121,559	136,233	134,745	89.2	90.2	1,220,869	1,696,711	1,823,122	2,180,124	3,029,846	3,255,577	72.0	67.0

* Countries not included in the totals. — s) Spring crop (*maggengo*). — f) Summer crop (*cinquantino*). — 1) Of which 218,000 acres unmixed crop and 141,000 acres mixed crop. — 2) Of which 3,538,000 centals (6,319,000 bushels) from unmixed crop and 1,909,000 centals (3,409,000 bushels) from mixed crop. — 3) European crop. — 4) Maize and sorghum. — 5) Area sown. — 6) Figures for the average not yet revised according to the 1933-34 census results.

various places, which improved conditions locally, crop prospects were generally poor. The drought damaged a large portion of the maize crop at a critical stage of growth and grubs caused a considerable amount of damage to the early planted maize. Rain was urgently required for maize in the flowering stage. Early frost may also have caused some damage.

RICE

Argentina: Crop condition of rice was satisfactory in the Provinces of Tucuman and the National Territory of Misiones but unsatisfactory in the Provinces of Jujuy and Salta owing to drought and weeds.

British Guiana: A fair spring crop was anticipated in February as planting had been more general.

Surinam: Rainfall was much below normal in 1934, rice sowings being consequently impeded and the area is smaller than it has been in recent years.

Formosa: Growth of first crop rice was proceeding satisfactorily.

Rice.

COUNTRIES	AREA					PRODUCTION OF ROUGH RICE											
	1934/35	1933/34	Average 1928/29 to 1932/33	% 1934/35		1934/35	1933/34	Average 1928/29 to 1932/33	1934/35	1933/34	Average 1928/29 to 1932/33	% 1934/35					
				1933/ 1934	Average 1934							1933/ 1934	Average 1934				
														= 100	= 100	= 100	= 100
1,000 acres			= 100	= 100	1,000 centals			1,000 bushels of 45 lb.			= 100	= 100					
Bulgaria . .	15	17	18	86.0	79.0	298	291	338	662	646	750	102.5	88.3				
Italy . . .	323	316	337	102.1	95.8	13,602	13,398	14,437	30,226	29,772	32,081	101.5	94.2				
United States	781	792	924	98.6	84.5	17,233	16,676	19,358	38,296	37,058	43,017	103.3	89.0				
Chosen . . .	4,196	4,160	3,985	100.9	105.3	68,401	74,440	64,333	151,999	165,418	142,958	91.9	106.3				
Taiwan (1)	713	708	652	100.7	109.4	17,985	15,703	13,861	39,965	34,895	30,802	114.5	129.7				
(2)	935	961	863	97.3	108.3	18,251	17,634	15,703	40,557	39,186	34,894	103.5	116.2				
India	68,360	70,183	69,843	97.4	97.9	850,832	863,647	911,017	1,890,701	1,919,177	2,024,441	98.5	93.4				
proper 3)	12,666	12,919	12,762	98.0	99.2	152,462	174,391	162,370	338,797	387,528	360,815	87.4	93.9				
Burma 3)																	
Indo-China:																	
Annam 4)	945	948	1,021	99.7	92.5	7,540	8,598	7,435	16,755	19,106	16,522	87.7	101.4				
(5)	1,156	1,233	1,237	93.8	93.4	12,801	13,974	14,736	28,446	31,053	32,746	91.6	86.9				
Tonkin. 5)	1,841	2,080	2,069	88.5	88.9	20,199	24,911	25,913	44,886	55,356	57,583	81.1	77.9				
(6)	7,775	7,779	7,915	100.0	98.2	212,116	289,882	247,420	471,359	644,169	549,810	73.2	85.7				
Japan . . .	8,461	8,019	7,596	105.5	111.4	114,288	110,402	95,982	253,968	245,333	213,289	103.5	119.1				
Siam 7)																	
Syria & Lebanon . .	2	1	8	197.7	494.3	19	15	5	43	34	12	123.9	364.0				
Turkey. . .	74	51	52	143.1	140.1	1,256	957	747	2,791	2,126	1,661	131.3	168.1				
Egypt . . .	407	438	301	92.8	134.9	11,304	11,775	8,054	25,120	26,166	17,898	96.0	140.3				
Totals. . .	108,650	110,605	109,575	98.2	99.2	1,518,587	1,636,694	1,595,365	3,374,571	3,637,023	3,545,182	92.8	95.2				

*) Countries not included in the totals. — 1) First crop. — 2) Second crop. — 3) Third estimate. — 4) First half-year. — 5) Rice of the fifth month. — 6) Rice of the tenth month. — 7) First estimate. Area sown and production in the whole country. The corresponding figures for the harvested area are as follows: 7,591; 7,448; 6,589; 101.9; 115.2. — 8) Area less than 500 acres.

India: In Madras, where sowing of the first crop begins in April, there was light to moderate rain in the latter part of March and first week of April; a number of districts however, experienced very dry conditions.

French Indo-China: The last crops of the 1934-35 season were not, on the whole, good. In South Annam rices of the twelfth month on high padis, of which harvesting was completed in February, gave yields slightly below average, as they suffered from violent winds and cold at the time of flowering; in some irrigated padis harvesting was not finished at the end of February. In Cochinchina the main crops and late rice that were still standing at the end of February were rather unsatisfactory in appearance as they had suffered from lack of water and from parasites; in districts submerged by floods rice that had been able to resist flooding gave only a very small yield; three-month rice, transplanted after the withdrawal of the floods in replacement of the main-

crop rice that had been destroyed, did not sufficiently develop, germination, flowering and grain formation having suffered greatly from drought and insects; the total crop of Cochin-China, already reduced by floods, appears in fact to be rather mediocre. In Cambodia the few padis transplanted with light padi and harvested in February suffered from drought and gave only a mediocre yield; on the other hand, the harvest of dry season padis, begun at the end of February, gave high yields, everywhere exceeding 9 centals (20 bushels); a acre the total production of Cambodia, though probably better than that of last year, is mediocre and distinctly below average.

On the whole and taking into account the reduction of area, the crop of Indo-China in 1934-35 was been below that of last season, which was a little above 12,800 million pounds of rough rice and also below normal, and may possibly not attain even the 12,300 million pounds obtained in 1931-32.

On the other hand, the appearance of the first crops of 1935-36 was generally very satisfactory in Tonking and Annam. In Tonkin the rice of the fifth month showed satisfactory growth at the end of February, thanks to the very favourable mild, damp weather. In North Annam condition of standing rice was very good, particularly, in certain districts, that of glutinous rice, which had to be topped to prevent excessive development of the leaves; save in some localities where the effects of drought were felt, the padis were also of good appearance, tillering was generally abundant, flowering occurred in good conditions and harvesting of early rices had begun at the end of February in some provinces; in South Annam rices of the third month were in full grain-formation but in several regions were suffering from drought.

POTATOES

Belgium: The favourable weather of March allowed spring plantings to be done in excellent conditions. Early potatoes have already been planted in some districts.

France: Planting of early potatoes was carried out in Brittany in good conditions as a result of the fine weather which prevailed in the second half of March. In the south (lower Rhone Valley) the planting suffered from frosts. Part of the land in the north intended for beet sugar, which will not now be sown owing to the contingent of this crop, will be sown to potatoes.

Hungary: In the first days of April planting of early varieties began. The land was being prepared and the tubers were being selected for main crop plantings.

United States: According to the enquiry into farmers' sowing intentions as at 1 March, the probable potato acreage for harvest this year is estimated at 3,272,000 acres, or about 5 % smaller than the area planted in 1934 and 1 % smaller than the area harvested.

Algeria: The first early crops suffered a setback owing to bad weather in the Alger *département* and the yield was rather low. Later planting in this and the Constantine *département* had a good appearance at the end of March.

SUGAR

The indications given last month on the probable area of the sugar-beet crop have been largely confirmed by the information received subsequently. With the latter it has been possible to draw up a table showing the preliminary

estimates, which are approximations, of the beet area of this year, compared with that of last year and the average of the five years 1929 to 1933.

These preliminary estimates show for Europe as a whole, excluding the U. S. S. R., a decline in the beet area of 4 % compared with last year and one of 8 % compared with the average. If Germany, the Irish Free State and Lithuania are excepted, the acreage of the crop has decreased or remained unchanged in all countries in Europe. It is not yet known whether sugar-

Acreage of sugar-beet.

COUNTRIES	1935 ^{a)}	1934	Average 1929 to 1933	% 1935	
				1934 = 100	Average = 100
Germany.	927,000	880,904	936,158	105	99
Austria	106,000	122,600	97,685	87	109
Belgium	131,000	132,366	134,551	99	97
Bulgaria	4,400	4,400	38,818	—	—
Denmark	101,000	102,300	89,085	99	114
Spain	200,000	250,000	213,922	80	92
Irish Free State	55,000	45,581	12,239	119	444
Finland	7,200	7,140	4,873	100	147
France	605,000	678,830	668,939	89	91
Great Britain.	375,000	403,884	287,010	93	131
Hungary	93,200	93,190	144,942	100	64
Italy	220,000	220,794	252,269	100	87
Latvia	35,000	35,600	15,000	97	233
Lithuania	15,000	10,000	7,846	150	189
Netherlands	101,000	103,586	117,463	98	86
Poland.	270,000	276,760	389,276	98	70
Romania	89,000	91,813	87,294	95	102
Sweden	122,300	125,077	94,460	98	129
Switzerland	3,700	3,830	3,277	97	113
Czechoslovakia	370,000	392,530	467,370	94	79
Yugoslavia	62,000	63,808	112,346	97	55
<i>Total Europe a) . . .</i>	<i>3,892,800</i>	<i>4,044,993</i>	<i>4,174,823</i>	<i>96</i>	<i>92</i>
U. S. S. R	3,000,000	2,906,000	2,941,783	102	101
<i>Total Europe b) . . .</i>	<i>6,892,800</i>	<i>6,950,993</i>	<i>7,116,606</i>	<i>99</i>	<i>96</i>
Canada . . . . .	...	52,000	46,953	...	...
United States	985,486	789,000	784,616	—	—
<i>Total North America . . .</i>	<i>...</i>	<i>841,000</i>	<i>831,569</i>	<i>...</i>	<i>...</i>
Japan . . . . .	...	24,750	22,722	...	...
Turkey	88,245	76,735	31,763	115	278
<i>Total Asia . . .</i>	<i>...</i>	<i>101,485</i>	<i>54,485</i>	<i>...</i>	<i>...</i>
GENERAL TOTALS : . . . a)	...	4,987,478	5,060,877	...	...
b)	...	7,893,478	8,002,660	...	...

^{a)} Approximate data. — ^{a)} Not including U. S. S. R. — ^{b)} Including U. S. S. R.

beet will be cultivated this year in Bulgaria. The same figure as that of last year has been provisionally inserted in the table. As indicated in March, the Five Year plan of the U. S. S. R. provides for a small increase. As regards non-European countries, estimates for Canada and Japan are not yet available. In the case of the United States, the table gives the maximum area fixed by the sugar section of Agricultural Adjustment Administration for the growers taking part in the A. A. A. plan, but, as the extent to which the plan will be carried

is unknown at present, percentages have not been calculated. In the case of Turkey, an increase of 15 % on the area of 1934 has been calculated from the indications received by the Institute from the Central Statistical Office of the Republic of Turkey.

Work in the sugar-beet fields has proceeded regularly and in normal conditions in nearly all parts. Sowings have already begun in a number of countries, assisted by the spring weather now prevailing.

E. R.

* * *

Belgium: Carting of manure was finished and preparations for sowing carried out. A reduction in area is expected.

France: Preparatory work for the sowing of beet was done in good conditions during the second half of March and sowings were to begin in the middle of April. An increase in the growth of beets for seed is evident.

Hungary: Toward 10 April the land was being prepared for sugar-beet. Sowings had already been carried out in some places.

Czechoslovakia: Weather was generally cold in the first half of March. Temperature rose in the second half and it was possible to begin the work of cultivation. At the end of the month there was a further fall in temperature and some rain which interfered with field work and continued until 8 April when temperature rose again. Winter precipitation was more plentiful than last year but moisture reserves in the soil were still insufficient, particularly in northern, central and western Bohemia. In other areas, especially in Slovakia, soil moisture was sufficient. Sowings began in Slovakia in the second half of the month. In other areas, sowing was late owing to weather conditions and began only in the second decade of April.

U. S. S. R.: 119,000 acres, that is, 4.3 % of the area assigned by the plan had been planted by 5 April, while at the same date last year 284,000 acres had been sown. The proportion sown by 10 April amounted to 16 % of the area required by the plan.

Barbados: In February grinding of the 1934-35 crop was general. It was expected that, given normal weather, sugar production, including fancy molasses, would be about 1,800,000 centals (90,000 short tons) as compared with 2,496,000 (124,800) in 1933-34 and 2,023,000 (101,200) on the average 1928-29 to 1932-33. Percentages: 70.7 and 87.2.

British Guiana: Weather in February was favourable to the reaping of the spring cane crop. Satisfactory yields were so far reported.

Mexico: The January frosts have caused serious damage to the cane-sugar crop in some of the northern departements.

Surinam: Weather conditions during the last three months of 1934 were very favourable to the new plantations but the rather plentiful rains of October had a rather unfavourable effect on the old plantations.

There was only slight damage from disease.

Trinidad: The weather in February was favourable to harvesting but showers were wanted for the growth of the ratoons and young canes.

Production of beet-sugar (rare).

COUNTRIES	TOTAL PRODUCTION DURING THE SEASON				
	1934-35 1)	1933-34	Average 1928-29 to 1932-33	% 1934-35	
				1933-34 = 100	Average = 100
thousand centals					
Germany	36,433	31,508	40,038	116	91
Austria	4,982	3,758	3,111	133	160
Belgium	5,842	5,360	5,553	109	105
Bulgaria	50	916	763	5	7
Denmark	1,992	5,375	3,291	37	60
Spain	7,055	4,850	5,827	145	121
Irish Free State	1,643	778	455	211	361
Finland	256	161	83	160	309
France	26,390	20,787	21,715	127	121
Great Britain	14,670	11,163	6,842	131	214
Hungary	2,638	2,985	4,099	88	64
Italy	7,870	6,713	8,430	117	93
Latvia	1,184	643	229	184	516
Lithuania	335	178	283	188	121
Netherlands	5,108	6,099	5,556	84	92
Poland	9,832	7,561	14,759	130	67
Romania	2,568	3,554	2,447	72	105
Sweden	5,953	6,720	3,740	89	160
Switzerland	213	198	140	108	152
Czechoslovakia	13,999	11,371	20,650	123	68
Yugoslavia	1,367	1,642	2,324	83	59
Total Europe a)	150,380	132,320	150,335	114	100
U. S. S. R. 3)	30,905	21,949	26,553	141	116
Total Europe b)	181,285	154,269	176,888	118	102
Canada	1,418	1,493	1,027	95	138
United States	24,989	35,312	24,946	71	100
Total North America	26,407	36,805	25,973	72	102
Japan	764	564	570	136	134
Turkey	1,433	1,598	335	90	428
Total Asia	2,197	2,162	905	102	243
GENERAL TOTALS { a) . . .	178,984	171,287	177,213	104	101
{ b) . . .	209,889	193,236	203,766	109	103

a) Not including U. S. S. R. — b) Including U. S. S. R. — 1) Approximate data. — 2) Average 1931-32 to 1932-33. — 3) Sand sugar.

Formosa: Sugar-cane planted since last summer was developing in average conditions. The condition of canes which were being reaped was mediocre.

India: In Madras rainfall in the majority of districts was light to moderate in the last two decades of March and the first week of April; condition of standing crops was on the whole fair but in a number of districts was badly affected by insufficiency of rain.

In the Punjab the last two decades of March were dry but in the first week of April there was rain in all districts.

In Bihar and Orissa during this period there was light rainfall in parts.

French Indo-China: Growth of new plantings was vigorous in Tonkin at the end of February. In Annam yields of the present crops were normal.

Production of cane-sugar.

COUNTRIES	1934-35 1)	1933-34	Average 1928-29 to 1932-33	1934-35 1)	1933-34	Average 1928-29 to 1932-33	Percentages for 1934-35	
							1933-34 = 100	Average = 100
	Thousand centals	Short tons			%			
AMERICA.								
Argentina	7,518	6,961	7,863	376,000	348,045	393,136	108	96
Brazil.	15,432	14,330	22,000	800,000	720,000	1,099,986	108	70
Cuba	51,853	50,945	78,613	2,593,000	2,547,193	3,930,573	102	66
Ecuador	441	463	451	20,000	23,000	22,554	95	98
United States (La) . .	4,560	4,100	3,584	228,000	205,000	179,200	111	127
Guadeloupe	882	921	578	40,000	46,073	28,895	96	153
Jamaica	1,676	1,609	1,291	84,000	80,000	64,536	104	130
Mexico	5,291	4,145	4,742	260,000	207,000	237,082	128	112
Peru	8,819	9,538	8,676	440,000	476,902	433,772	92	102
Puerto Rico	14,881	22,077	16,222	744,000	1,103,811	811,101	67	92
Dominican Republic . .	8,047	8,565	8,306	402,000	428,250	415,308	94	97
Total America	119,400	123,654	152,326	5,987,000	6,185,274	7,616,143	97	76
ASIA.								
Taiwan	20,360	14,265	17,725	1,018,000	713,226	886,224	143	115
India 2)	113,904	109,133	78,266	5,695,000	5,457,000	3,913,000	104	145
Japan 3)	2,321	1,635	1,915	116,024	81,740	95,773	142	121
Java	10,362	13,604	55,081	520,000	680,184	2,753,998	76	19
Philippine Is. 4) . . .	16,755	31,526	21,572	840,000	1,580,000	1,078,572	53	78
Total Asia.	163,702	170,163	174,559	8,189,024	8,512,150	8,727,567	96	94
AFRICA.								
Egypt.	2,870	3,406	2,892	145,000	170,303	144,583	84	99
Madagascar	190	183	133	9,500	9,150	6,650	104	142
Mauritius	3,920	5,764	4,954	196,000	288,200	247,720	68	79
Reunion	1,402	1,707	1,042	70,000	85,350	52,107	82	134
Union of South Africa	7,175	7,823	6,690	358,738	391,173	334,471	92	107
Total Africa.	15,557	18,883	15,711	779,238	944,176	785,531	82	99
OCEANIA.								
Australia	14,780	14,358	12,304	740,000	717,913	615,180	103	120
Hawaii	20,503	20,580	19,557	1,030,000	1,028,990	977,817	100	105
Fiji Is.	2,491	2,579	2,170	125,000	129,000	108,508	97	115
Total Oceania	37,774	37,517	34,031	1,895,000	1,875,903	1,701,505	101	111
GENERAL TOTALS . . .	336,433	350,217	376,627	16,850,262	17,517,503	18,830,746	96	89

1) Approximate data. — 2) Production of *gur*. — 3) Production of sugar (refined and raw) and molasses. — 4) Production of sugar and *panocha*.

Java: Weather during the second half of March was typical of the change in season with warm sultry days. Rains were plentiful only on the north coast; elsewhere they were inadequate and irregular. Crop condition of the cane was satisfactory. Tasselling in new plantations and reaping in old plantations made good progress. Preparation of the soil for the 1935 crop has begun in many parts.

No serious disease damage was reported.

(Telegram of 20 April): Rain fell over nearly all the sugar area during the first half of April but it was unevenly distributed. Crop condition was good everywhere, notwithstanding the large amount of cane laid by the wind.

Preparatory work for the cane to be cut in 1936 made good progress though impeded by showers. Little damage has been caused by disease and insects. Only local attacks of *fusarium*, gum disease and mosaïque (in nurseries) were reported.

Egypt: The preparation and planting of the areas assigned to the new crop are in progress. About 70 % of the area in Kena province (Upper Egypt) has been cultivated and the growth is satisfactory. The rest of the old crop in Upper Egypt is still being cut and supplied to the sugar factories.

Mauritius: During February the weather continued to be favourable for the standing cane crop, which was in very good condition.

Union of South Africa: Crop condition of the end of February averaged 10 % below normal. Rainfall for the month was below average; Zululand suffered most.

The falling-off in the final estimate of 1934-35 production with respect to the first estimate of last May may be attributed to the unfavourable effect of the weather on sucrose content, which averaged only 11.88 % against 13.88 % for the previous season, and to locust infestation.

VINES

Spain: The weather was generally dry and rather cold in March; though temperatures rose toward the end of the month, only some of the central areas received rain. The vines did not appear to have suffered from the rather unsatisfactory weather and their appearance at the end of March was good in the districts not affected by phylloxera; budding was, however, retarded and was scarcely beginning in the last days of March in the better exposed districts.

France: There were frosts in the south and south-west at the beginning and end of March and in some vineyards there was damage which appears to be rather serious though the total extent of damage in vineyards could not be estimated exactly. The weather, though rather wet in most districts, was dry and rather cold in the south up to the end of March. The budding of vines is 15 days late but rain fell in the last days of March, temperature rose and fine warm weather accelerated budding which then proceeded rapidly in good conditions. The condition of vines was fairly satisfactory on the whole at the beginning of April but there was still a danger of late frosts.

Italy: The cold and rather rainy weather delayed budding which had scarcely commenced at the beginning of April but which took place under good conditions. No serious losses from storms or frosts are reported.

Romania: There was no frost damage to vines during the winter. Growth began towards the end of March.

Cyprus: The production of raisins in 1934 was 9,800,000 lb. as compared with 7,000,000 in 1933 and 10,285,000 on the average 1928-32. Percentages: 140.0 and 95.3. The production of fresh grapes was 110,320,000 lb. as against 99,624,000 in 1933 and 109,243,000 on the average of the two years 1931 and 1932. Percentages: 110.7 and 101.0.

Algeria: At the beginning of April budding was general and took place in good conditions in all districts, it was late this year contrary to expectations, but the buds are large and well formed. Condition is generally satisfactory despite infestation with *altises* in the *département* of Oran; rainfall has, however, been very small in this *département* and growth and ripening of the grapes was hindered during the period of high temperatures.

French Morocco: Pruning and spring work was completed at the beginning of March. Condition is very satisfactory and early vines began to show good budding at the end of February. March was dry with varying temperatures, normal in the first decade, very cold in the middle of the month when sharp frosts occurred in Meknes, and rather above average at the end of the month.

Tunisia: Vines began budding at the end of March. In the north (the Bizerta and Tunis areas) work was impeded by excessive wet.

Australia: In mid-February crop prospects were good in South Australia, the principal producer of wine in the Commonwealth; the winter was fairly dry and a fairly large rainfall was wanted before mid-March, but the vines, which had suffered relatively little from frosts, were free from disease. On the other hand, in Victoria and New South Wales, the principal producers of table grapes and raisins, frosts and mildew rather severely reduced the crop and in some districts the latter was expected to be less than half that obtained last year; in addition, ripening of grapes was hindered in Victoria by low temperatures.

OLIVES

Olive and Olive-oil Production.

COUNTRIES	AREA					BRITISH MEASURES			AMERICAN MEASURES			% 1934/35	
	1934/35	1933/34	Aver. 1928/29 to 1932/33	% 1934/35		1934/35	1933/34	Aver. 1928/29 to 1932/33	1934/35	1933/34	Average 1928/29 to 1932/33	1933/ 1934	Aver- age
				1933/ 1934	Aver. = 100							= 100	
	Thousand acres			= 100		Thousand centals			Thousand s) pounds t) Amer. gallons				
Spain . .	...	4,698	4,585	...	...	s) 26,811 t) 5,031	36,314 6,838	37,800 7,348	2,681,149 66,109	3,631,358 89,856	3,780,002 96,551	73.8 73.6	70.9 68.5
France . .	—	—	—	—	—	s) 1,295 t) 617	589 540	877 783	129,522 61,730	58,875 53,982	87,737 78,324	220.0 114.4	147.6 78.8
Greece 1) .	—	—	—	—	—	s) 2,425 t) 29,505	2,323 25,876	2,270 29,214	31,867 2,950,494	30,521 2,587,647	29,833 2,921,439	104.4 114.0	106.8 101.0
Italy 1) a) b)	2,002 3,152	1,991 3,146	1,667 3,781	100.6 100.2	120.1 83.4	s) 4,782 t) 536	3,611 1,652	4,734 982	62,839 7,040	47,448 21,711	62,206 12,903	132.4 32.4	101.0 54.6
Portugal .	—	—	—	—	—	s) 1,446 t) 212	1,092 349	1,274 239	109,791 2,781	109,194 4,584	127,438 3,140	132.4 60.7	113.5 88.6
Syria and Lebanon	194	192	187	101.1	103.6	s) 292 t) 212	214 183	276 442	29,211 3,980	21,366 2,408	27,650 5,804	136.7 173.7	105.6 80.6
Algeria . .	...	168 2)	200	...	...	s) 1,587 t) 303	1,587 183	3,417 442	275,579 3,980	158,678 2,408	341,713 5,804	173.7 165.3	80.6 68.6
French Mo- rocco . .	—	—	—	—	—	s) 1,653 t) 254	1,080 161	1,385 242	165,347 3,332	108,027 2,115	138,541 3,175	153.1 157.5	119.3 104.9
Tunisia . .	—	—	—	—	—	s) 1,213 t) 1,213	1,323 1,323	955	15,934 17,382	17,382	12,544	91.7	127.0
TOTALS . .	—	—	—	—	—	t) 14,756	16,440	17,212	193,882	216,025	226,156	89.7	85.7

a) Pure crop. — b) Mixed crop. — s) Olives. — t) Oil. — 1) Olive production refers to table olives. — 2) Year 1932-33. — 3) Olives for preserving. — 4) Olives for oil.

Algeria: At the beginning of April flowering took place in good conditions. Crop condition was generally satisfactory despite some local losses caused by snow, of which the weight broke branches.

Tunisia: Pruning and hoeing were carried out. In the South (Susa and Sfax areas), which have two thirds of the trees in bearing, growth was very good and the branches bearing fruit were very well developed; flowering, which began at the end of March in the Sfax area and in the first decade of April in that of Susa, appeared likely to be very abundant if good weather was maintained.

COTTON

Romania: According to the most recent information, cotton production in 1934 is estimated at 5,100 centals (1,100 bales of 478 lb.) against 8,500 centals (1,800 bales) in 1933 and an average of 1,200 centals (250 bales) in the five years 1928-1932.

The wide fluctuations in production are chiefly the result of variations in the area under cotton during these years.

U. S. S. R.: 370,000 acres of cotton had been sown by 10 April compared with 99,000 acres only at the same date last year. Weather conditions in Central Asia were favourable for the sowings.

Argentina: Crop condition of cotton in the National Territory of the Chaco in March varied from mediocre to good. Drought damage varied between a minimum of 5 % and a maximum of 15 %. The outlook in Corrientes was generally satisfactory. Slight grasshopper damage was reported in some places.

St. Vincent: In the quarter ending 31 December 1934 conditions were very favourable in most districts but owing to low prices cultivation was often somewhat neglected. A fair amount of boll shedding occurred in December but insect pests were very scarce. No pink bollworm or caterpillars were reported and the incidence of stainers was very low. The area under Sea Island cotton was 1,464 acres as compared with 1,216 in 1933-34 and 2,535 on the average of the preceding five seasons. Percentages: 120.3 and 57.7. Production of grined cotton was forecast at about 1,600 centals (335 bales of 478 lb.) as against 997 (209) in 1933-34 and 3,056 (639) on the average. Percentages: 160.6 and 52.4. The area under Marie Galante cotton was 652 acres as compared with 719 in the previous season and 966 on the average. Percentages: 90.7 and 67.5.

India: Unfavourable weather conditions, especially the cold spell and frost in January, reduced yields.

In the Central Provinces the weather in the last two decades of March and the first week of April was clear and warm, though at times in the last week rather cloudy with light showers all over the province and rain and hail damage in some parts.

The following is the fifth forecast of area and the third of production for Madras, according to a telegram received on 15 April 1935. Area is 2,271,800 acres, an increase of 8.4 on the corresponding estimate of 1933-34 and of 0.6 % on the average of the five years ending 1932-33; production is 1,819,600 centals, an increase of 3.0 % and a decrease of 1.1 % respectively. In the last decade of March and first week of April there was light to moderate rain save in some areas where droughty conditions were experienced.

In the Punjab the last two decades of March were on the whole dry with only light showers latterly; in the first week of April, however, there was rain in all districts.

French Indo-China: In Annam growth at the end of February was normal. In Cambodia harvesting was about to begin and yields appeared likely to be above the average; it was expected in places to obtain up to 4 centals per acre of raw cotton against the normal yield of about 2.2 centals.

Egypt: Owing to favourable weather, sowing has progressed immensely during March and is considered to be about 10 days earlier than last year. Early sowing, to the extent of one-third of the total areas, terminated on 15 March in the north of the Delta and everywhere on the 5th. At the end of the month, sowing was almost over in the south of the Delta and Middle Egypt.

Seedlings were adversely affected by the changes in of the weather, especially during the latter half of the month; consequently the rate of germination varied from 80 to 85 % in the north of the Delta. In other parts of the country the germination was good and resowing is not expected to exceed 5 %.

Cotton has been cultivated early this year, owing to dry weather and a desire to prevent blight.

Cotton ginned up to the end of March in bales of 478 lb. net weight:

	1935	1934	1933	1932	1931	1930	1929
Sakellarisidis	182,820	222,950	223,050	236,890	325,960	487,550	470,550
Other varieties above:							
I ³ / ₈ "	231,930	194,760	101,130	946,720	966,400	1,064,440	1,034,970
I ¹ / ₂ "	39,490	71,320	67,330				
I ¹ / ₄ "	985,380	1,121,710	527,740				
Total	1,439,600	1,610,740	919,250	1,183,610	1,292,360	1,551,990	1,505,520
Scarto (linters)	30,915	31,750	21,250	31,730	31,210	36,600	43,530
Total production (including Scarto)	*) 1,616,500	1,776,900	1,027,000	1,317,300	1,714,900	1,767,800	1,671,800

*) Second estimate.

Nigeria: Up to 19 January 1935, 130,240 centals (27,247 bales of 478 lb.) of cotton had been purchased for export as against 67,600 (14,155) during the same period last season. The total crop may therefore be confirmed as a record one and it is unlikely that a revision of the approximate estimate that was published last month will involve any considerable change.

Nyasaland: In February the cotton area was estimated to be from 50 to 100 % larger than that of last year.

Uganda: At the beginning of March in the Eastern and Northern Provinces little cotton remained to be marketed. In Buganda Province the position was rather obscure, weather conditions during February having been most unfavourable with heavy rainfall in most areas. These conditions adversely affected the prospects of late sown cotton and the top crop which was expected to develop on the earlier plantings. The estimate of total production has consequently been reduced as may be seen in the table of supplementary figures.

FLAX AND HEMP

Belgium: Carting of manure and preparatory cultivation was completed. An extension of the crop was expected.

France: An expansion in the flax crop is anticipated in the north, partly owing to the contingent of sugar beet.

Hungary: Toward 10 April sowings were in full swing and in some places were ended and at same date the land was being prepared for sowings.

Egypt: Area sown to flax is estimated this year at 4,000 acres, as against 5,200 last year and 3,100 in the average during the preceding five years. Percentages: 77.9 and 130.4.

THE TRADE IN SUNFLOWER SEED

I. — PRODUCTION

The cultivation of sunflowers is at present concentrated in the South of Russia European, Romania, Bulgaria and Hungary.

While it is known that China produces very large quantities, statistical data for that country are lacking.

Considerable extension of sunflower cultivation has also, however, in consequence of the increased industrial use of sunflower oil, taken place in recent years in Argentina, where the quantity of sunflower seed used for oil extraction rose from 2,100,000 pounds in 1929 to 28,700,000 in 1933.

In Russia the sunflower has long been grown for two distinct purposes: 1) seed used for the extraction of edible oil (small, round, well-filled and thin-shelled variety containing 20 % to 30 % of oil); 2) seed for direct human consumption (large, long, heavy thick-shelled variety, containing 15 % to 20 % of oil).

Prior to the War Russia exported large quantities of sunflower seed and cake. The shortage of fats in the war and revolution periods stimulated the extension of the crop and there was a further rise in production between 1931 and 1933.

Sunflower seeds.

Principal Countries	1934	1933	1932	1931	1930	1925
<i>Area (acres).</i>						
U. S. S. R. . . 1)	8,649,000	9,630,000	13,112,000	11,305,000	8,367,000	2) 2,214,000
Romania . .	494,000	403,000	400,000	400,000	455,000	—
Bulgaria . .	259,000	208,000	178,000	255,000	161,000	4) 12,000
Hungary 3) . 1)	395,000	442,000	390,000	393,000	319,000	—
<i>Yield (million pounds).</i>						
U. S. S. R. . . 1)	4,410	5,180	5,000	5,530	3,600	2) 1,700
Romania . . 1)	440	380	340	325	335	5) 20
Bulgaria . .	220	170	135	225	120	4) 7
Hungary . . 1)	44	49	50	51	65	5) 7
<i>Average yield (pounds for acre).</i>						
U. S. S. R. . . 1)	510	540	380	490	430	2) 830
Romania . .	890	940	850	830	740	—
Bulgaria . .	830	830	760	880	760	4) 540
Hungary . .	—	—	—	—	—	—

1) Probable estimate, calculated. — 2) Pre-war frontiers. — 3) Catch crop. — 4) Year 1920.
— 5) Approximate.

From 1932 the effects of the world crisis in fats began to be felt also in the U. S. S. R., which in 1933 decided to reduce the area under sunflower like those under other oleaginous crops. Owing, however, to higher unit-yields, production in 1933 of the sunflower seed even slightly exceeded that in 1932. The information available for 1934 indicates a further reduction in area and, according to an unofficial estimate production would not have exceeded 4,410 million pounds, which would be the smallest of the last four years.

In the Danubian countries, where also sunflower oil is largely used for food (save in Hungary, which produces especially for industrial purposes) there has also been an appreciable extension of the crop with respect to the pre-war period, favoured by the fat shortage in the years immediately following the war.

During the last five years the total areas cultivated to sunflower in the three Danubian countries considered remained fairly constant and, as unit-yields do not vary to any very appreciable degree, the annual production of these countries together has remained around 600 million pounds, save in 1934, when production was probably above 700 millions pounds.

II. — TRADE.

Seed. — Contrary to what holds good for the principal oilseeds, the proportion of sunflower seed entering into world trade is very small (only 0.02 %).

Before the War Russia almost monopolized the world trade in sunflower seed, exporting annually about 110 million pounds. After the War and the Revolution the export almost completely ceased, to revive to a small extent in 1929 and 1930 (about 11,000,000 pounds a year). Since 1931 exports have again ceased, owing in part to the intensification of local oil production, of which the export recommenced after that date on a much larger scale than before the War, and in part to the growing competition of Romanian and Bulgarian production on the international markets.

Sunflower seed.

Principal Countries	1934	1933	1932	1931	1930
<i>Exports (ooo pounds).</i>					
Romania	96,000	86,000	142,000	83,000	30,000
Bulgaria	26,000	24,000	59,000	50,000	8,000
Hungary	11,000	29,000	15,000	7,000	26,000
U. S. S. R. 1)	2) 7	0	2	60	10,000
Argentina	15,000	7,000	400	1,800	900
<i>Imports (ooo pounds).</i>					
Poland	41,000	41,000	47,000	18,000	19,000
Germany	38,000	37,000	40,000	24,000	11,000
Netherlands	33,000	19,000	19,500	29,000	13,000
Czechoslovakia	18,000	13,000	13,000	11,000	15,000
Belgo-Luxemburg Union	10,000	9,000	11,000	17,000	19,000
Italy 3)	2,000	1,000	29,000	1,000	9,000
Denmark . . . . .	...	...	12,000	15,000	3,000

1) Russian exports in 1913 were about 110 million pounds. — 2) January-August 1934. —

3) Including other seeds but consisting mostly of sunflower seed.

During the last few years in fact the place of the U. S. S. R. among the countries exporting sunflower seed has been taken by Romania, Bulgaria and Hungary, whose total export rose from 70 million pounds in 1930 to 200 million in 1932, falling again to 130 million in 1933 and 1934.

The chief countries importing sunflower seeds at present are Germany, the Netherlands, the Belgo-Luxemburg Union, Denmark and Italy which import seeds exclusively for the extraction of oil for industrial purposes (lubricating oils, the manufacture of soap, varnishes, etc.).

Two other countries, Poland and Czechoslovakia, also import considerable quantities of seeds but, in this case, they are used for the manufacture of edible oils.

Total imports of sunflower seeds in the seven countries mentioned have expanded considerably during the last three years (1932 to 1934) chiefly as a result of the increase in the demand of Poland, Germany and the Netherlands.

Oil. — World trade in sunflower oil is still of small importance if it is compared with that of other oleaginous oils, but it has grown from 5,500 long tons in 1930 to about 16,000 long tons in 1933 and to a still larger figure in 1934 while in 1932 it even reached 42,000 long tons.

Sunflower oil.

Principal Countries	1934	1933	1932	1931	1930
<i>Exports (long tons).</i>					
U. S. S. R. 1)	12,800	13,200	34,400	21,800	2,600
Romania	200	400	5,500	4,600	2,700
Netherlands	4,200	1,500	1,300	300	30
Germany	800	1,100	900	1,000	100
<i>Imports (long tons).</i>					
Netherlands	5,000	2,000	3,500	2,500	1,100
Germany 3)	3,000	1,400	14,800	3,000	1,500
Austria	3,000	2,000	5,500	4,000	1,000
Belgium	1,000	1,800	1,300	1,000	1,200
England 4)	900	1,000	1,300	10,300	900
United-States	4,400	10,600	7,300	12,300	100

1) Russian exports in 1913 were about 4,000 long tons. — 2) January-August 1934. — 3) Figures based on imports from the U. S. S. R. — 4) Imports from the U. S. S. R.

The total volume of sunflower oil placed annually on international markets thus exceeds the quantity of sesame oil, approaches the annual exports of linseed oil (particularly in 1932), and recently exceeded world exports of cotton oil, though before the war sunflower oil was almost unknown in world markets.

The chief supplier of oil is the U. S. S. R., which increased its exports considerably, especially during 1931 and 1932. It should be noted that this country principally exports oil for industrial purposes.

Between 1930 and 1932 Romania also showed a tendency to enlarge its exports of sunflower oil but these subsequently fell to very modest amounts.

Sunflower oil to be used exclusively for industrial uses is imported chiefly by Germany, England, the Netherlands, Belgium and Austria while the United States import oil also for human consumption. During recent years these imports reached very considerable proportions.

Oil-cake. — World trade in sunflower oil cake is small compared with trade in cake made from other oleaginous seeds.

Sunflower Oil-Cake.

Principal Countries	1934	1933	1932	1931	1930
<i>Exports (millions pounds).</i>					
U. S. S. R. 1)	2) 300	300	500	330	260
Romania	140	90	140	120	130
Bulgaria 3)	60	60	70	80	80
<i>Imports (millions pounds).</i>					
Denmark	335	300	380	360	350
Germany	90	95	170	70	100
Sweden	40	35	50	45	25
England	10	11	75	1	30

- 1) Russian exports in 1913 were about 660 millions pounds. — 2) January-August 1934. —
3) Oil-cake of oleaginous seeds in general, but consisting mostly of sunflower oil-cake.

The three chief exporting countries are the U. S. S. R., Romania and Bulgaria. Their yearly exports amount to 500 million to 700 million lb., more than 50 % of the total coming from the U. S. S. R.

The chief importing country is Denmark whose exports, after reaching 380 million lb. in 1932, fell in the last two years to 300 million lb. and 335 million lb. respectively.

Imports into Germany and Sweden have shown practically no change during recent years. Those of England, however, show great fluctuations. They increased from 1 million lb. in 1931 to 75 million lb. in 1932 and fell to 1 million lb. in the last two years.

III. — PRICES.

An approximate idea of the course of prices will be provided by the average value per quintal of sunflower seeds, oil, and cake exported by the three chief suppliers, the U. S. S. R., Romania and Bulgaria.

Average Value of exports.

(in Swiss francs per quintal)

Years.	Sunflower seeds		Sunflower oil		Sunflower oil-cake		
	Romania	Bulgaria	U. R. S. S.	Romania	U. S. S. R.	Romania	Bulgaria
1930	15.5	13.3	69.3	74.4	13.3	8.4	8.0
1931	9.6	7.2	48.0	49.6	10.7	6.2	6.9
1932	10.2	8.0	29.3	37.2	8.0	6.3	4.8
1933	12.4	8.0	34.7	32.6	8.0	5.9	4.8
1934	10.2	7.1	1) 26.7	40.0	1) 5.3	6.7	4.8

- 1) Average price of exports between 1 January and August 1934.

The general decline in the prices of seed, oil and cake of oleaginous plants which occurred after 1931 on world markets was not without its effects on sunflower products. But, although seeds of the chief oleaginous plants lost more than 50 % of their value in recent years, prices of sunflower seed withstood the general fall better and have even shown a firm tendency so that compared with 1930 they have fallen only from 20 to 40 %.

Similarly, oils of other oleaginous seeds fell during the same period by more than 70 % while those of sunflower oil declined only 50 to 60 %.

Prices of sunflower cake only followed more closely the fall in the prices of other oil seed cakes.

G. SEVERIN.

HOPS

Belgium: Area is expected to increase.

Hungary: The crop wintered well. Toward 10 April pruning had begun.

TOBACCO

Belgium: Area is greater than last year.

Hungary: Toward 10 April the hot-beds had already been prepared and sowing was almost completed. Crops sown early germinated well and were developing satisfactorily but they required higher temperatures.

Argentina: Tobacco production in the Province of Tucuman will be greater than that of last year. Damage was caused in the Chaco by the drought, but a plentiful crop is expected in the National Territory of Misiones. In Corrientes and Catamarca the satisfactory crop condition gave rise to expectations of good yields.

French Indo-China: Growth was normal in the north and central areas of Annam. In the south, harvesting which was almost finished at the end of February, was rather unsatisfactory owing to the long drought. The crop in Cambodia has also suffered from drought and yields appear to be very irregular and, on the whole, smaller than average.

Algeria: Sowings in nurseries suffered from storms, frosts and excessive humidity in the east (Bone district) and from cold, which hindered growth; development was, however, rapid in the latter half of March, thanks to the warm, sunny weather. Transplanting was carried out rapidly at the beginning of April in good conditions. It appears that the area under the crop is practically the same as last year.

Nyasaland: It was reported in February that the quality of the tobacco crop was fair.

OTHER PRODUCTS

Cacao.

Brazil: According to the Instituto de Cacao da Bahia the 1934-35 crop in Bahia amounted to approximately 218 million pounds, of which 7 million are accounted for by internal consumption.

Weather up to mid-March was favourable though fears were beginning to be entertained regarding possible continuance of the heavy rains.

In Ilheus the weather in March continued unsettled. Rainfall at Ilheus was 212.60 mm. (8.37 inches) against the average of 244.35 mm. (9.62 inches). Prospects for the early crop were reported to be good.

The following are the latest statistics of crop movement:—

Entries by rail (1000 lbs.):

	March 1935	May 1934 to March 1935	March 1934	May 1933 to March 1934
Ilhéos zone	77	80,907	674	85,699
Rio de Contas zone	2	9,433	28	8,754

Surinam: Crop condition of cacao did not improve during the last quarter of 1934. More and more plants are being cut and the land is used for other crops.

Trinidad: During February the harvest was in full swing and satisfactory yields were reported.

Gold Coast and British Togoland: During February harvesting was completed in all areas except Krobo, where some 5 % remained on the farms. Weather was generally favourable, the rainfall at the eight key stations being considerably lower than the average expected for this month. Marketing became freer and at the end of February it was estimated that about 34 million pounds remained in farmers' hands against 101 million at the end of January. Total stocks were estimated at 166 million pounds.

Rumours that the crop was turning out much larger than expected were current during the month but this may be offset to some extent by the increased freedom in marketing. In the nineteen reports received from district officers at the end of February two changes were made in the estimates. The production from the Jasikan area of Togoland is showing a marked increase due to a large number of new farms coming into bearing and increased yields from the younger cacao; the increase over the original estimate was about 7 million pounds. In the Nsawam-Sulem-Kibi area also increased quantities have been marketed, amounting to 9 million pounds over the original estimate. The officer-in charge of the district considers, however, that a proportion of this cacao has been produced in other districts but marketed at the cacao centres in the area, so that there will be a partially compensatory decrease in the quantity marketed in adjacent districts. The net increase is not considered to be more than 7 million pounds. An additional obscuring feature is that some consignments that had been recorded at rail or road checks were on subsequent inspection rejected and returned to places of origin. These increases put the total crop estimate at 535 million pounds.

The following are the data of crop movement in the first five months of the season in millions of pounds.

	February 1935	Oct. 1934 to Febr. 1935	February 1934	Oct. 1933 to Febr. 1934
Railway offloadings, Takoradi	53	215	36	210
Exports:				
Takoradi	35	110	32	123
Accra	37	143	26	115
All ports	88	334	69	299

The purity of lots examined at fifteen centres under the Ordinance showed a further decline and all district reports draw attention to the poor quality of the cacao.

	Mould	Germinated	Slaty	Weevil	Purity
February 1935 (mean of 15 centres).	4.3	4.3	6.8	0.6	85.0
February seven-year mean	3.4	3.4	6.2	0.7	87.5

The purity this season is the lowest recorded since accurate data have been available from inspection at the ports, which began in 1927-28.

Nigeria: In February the main cacao season was about to close. Both quality and quantity of the crop continued to be reported as being satisfactory.

Tea.

India: In North India no crop was harvested during February but useful rain had been experienced in most districts and prospects were favourable. In South India the outturn in February was 2.71 % behind that to the same date last year; crop prospects were not so good although they improved slightly toward the close of the month; the weather had been much too dry.

French Indo-China: In Tonkin black fly and « quenouille » caterpillar attacked the bushes; yield was smaller than in January; the tea prepared was of good quality. In Annam production was normal.

Nyasaland: During January the weather was favourable for the tea crop. Yields were reported to be above expectations

Coffee.

Brazil: According to the statistics of the National Coffee Department, the total amount of coffee destroyed in Brazil up to the end of January was 45,799,000 cents, 251,000 cents were destroyed in January.

Costa Rica: The prospects for the coming harvest indicate that production will be definitely greater than the greatly reduced outturn of 1933-34.

Mexico: According to the first estimate production of coffee this year is 874,500 cents against 778,800 in 1933-34 and 862,600 on the average of the five years ending 1932-33; percentages 112.3 and 101.4.

Surinam: Crop condition of coffee during the last quarter of 1934 was generally good and the season was favourable to the yield of beans. Part of the crop was lost, however, owing to a shortage of labour.

French Indo-China: In Tonkin *Simeleia vastratrix* continued to attack Arabica and Excelsa bushes up to the end February; drying was hindered by bad weather.

Kenya: During February beneficial rains fell in the coffee areas. It was expected that blossoming would be very good next season.

According to the final estimate, the production of clean coffee in 1934-35 is 26,258,000 lb. as compared with 26,321,000 in 1933-34 and 23,846,000 on the average of the preceding five seasons. Percentages 99.8 and 110.1.

Tanganyika: During February substantial rains fell in most districts. A good coffee crop was anticipated in the Arasha and Moshi districts, provided rainfall continued to be normal.

Groundnuts.

Nigeria: At the beginning of February the groundnut season was practically over. About 3,400,000 centals had been marketed in the North up to that date and only small quantities were then arriving on the market.

Union of South Africa: The first estimate of production in 1934-35 is 269,000 centals against 279,000 in 1933-34, a decrease of 3.6 % and 115,300 on the average of the five years ending 1932-33, an increase of 133.2 %. The low average is due to the very small production of the drought years 1930-31 and 1931-32.

Colza and sesame.

Hungary: Winter colza had a vigorous appearance toward 10 April. For its subsequent development, however, higher temperatures were wanted. Sowings of spring colza had not begun.

Poland: Crop condition of winter colza on 15 March was 3.0 against 3.8 on 15 December 1934 and 3.2 on 15 March 1934.

According to the final estimate production of colza in 1934 is about 739,000 centals (1,479,000 bushels) against 614,000 (1,228,000) in 1933 and 610,000 (1,220,000) on the average of the five years ending 1932; percentages 120.4 and 121.2.

Romania: Winter colza was adversely affected by frosts during the winter. Damage was most extensive in Moldavia where losses are estimated at 50 % of the area sown.

According to the most recent estimate production of colza in 1934 was about 382,000 centals (764,000 bushels) against 592,000 (1,184,000) in 1933 and 720,000 (1,441,000) on the average of the five years ending 1932; percentages 64.5 and 53.1.

Sericulture.

French Indo-China: The growth of mulberries in Annam was good at the end of February and fairly considerable rearings were undertaken in the south.

SUPPLEMENTARY FIGURES

As the production and area for most countries were published in the February number of the Monthly Crop Report and Agricultural Statistics, it is not necessary to repeat them again this month. Hence only the new data and any modifications of the figures published last month are given in continuation. In another table is shown the total world production based on the figures received up to the time of going to press.

COUNTRIES	AREA					PRODUCTION							
	1934	1933	Average 1928 to 1932	% 1934 and 1934/35		1934	1933	Average 1928 to 1932	1934	1933	Average 1928 to 1932	% 1934 and 1934/35	
	—	—	—	1933	Aver.	—	—	—	—	—	—	1933	Aver.
	1934/35	1933/34	1928/29 to 1932/33	1933/1934 = 100	= 100	1934/35	1933/34	1928/29 to 1932/33	1934/35	1933/34	1928/29 to 1932/33	1933/1934 = 100	= 100
WHEAT	1,000 acres					1,000 centals			1,000 bushels				
Luxemburg	40	34	27	118.0	145.8	703	597	307	1,171	995	511	117.7	229.1
Norway	46	28	29	165.1	160.1	722	453	433	1,204	755	722	159.5	166.8
Poland	4,315	4,187	3,908	103.1	110.4	45,865	47,931	40,812	76,440	79,883	68,018	95.7	112.4
Cyprus	162	176	180	92.0	90.0	1,318	983	1,041	2,197	1,638	1,734	134.1	126.7
Kenya	44	35	58	124.3	75.5	360	291	347	601	485	578	123.8	104.0
Tunisia	1,903	1,754	2,005	108.5	94.9	8,708	5,512	8,139	14,514	9,186	13,566	158.0	107.0
Argentina 1) . . .	17,199	18,041	18,336	95.3	93.8	142,992	171,675	144,542	238,316	286,119	240,898	83.3	98.9
RYE													
Luxemburg	19	21	18	94.6	107.4	307	322	233	548	575	416	95.2	131.6
Norway	15	16	17	92.4	83.1	221	245	279	395	438	498	90.1	79.3
Poland	13,934	14,271	14,061	97.6	99.1	142,506	155,940	140,616	254,476	278,465	251,101	91.4	101.3
Argentina 1) . . .	1,458	904	811	161.2	179.7	8,841	5,225	4,463	15,787	9,330	7,970	169.2	198.1
BARLEY													
Luxemburg	6	7	10	89.9	66.6	89	106	127	185	220	264	84.1	70.2
Norway	147	142	138	103.7	106.4	2,547	2,206	2,326	5,307	4,597	4,846	115.5	109.5
Poland	2,909	2,882	3,028	100.9	96.1	32,025	31,656	33,191	66,719	65,951	69,148	101.2	96.5
Cyprus	127	105	109	120.7	116.8	993	713	859	2,069	1,485	1,789	139.3	115.7
Argentina 1) . . .	1,705	1,379	960	123.7	177.6	19,533	17,284	9,491	40,695	36,010	19,774	113.0	205.8
OATS													
Norway	226	242	239	93.3	94.6	3,887	3,973	3,921	12,146	12,416	12,254	97.8	99.1
Poland	5,412	5,447	5,342	99.3	101.3	56,234	59,149	55,110	175,730	184,839	172,218	95.1	102.0
Romania	2,044	2,050	2,510	99.7	81.4	12,418	17,779	21,205	38,806	55,558	66,265	69.8	58.6
Cyprus	10	11	12	91.8	82.0	62	56	61	193	174	191	110.9	101.0
Chosen	289	292	280	99.0	103.3	896	842	1,455	2,800	2,633	4,548	106.3	61.6
Argentina 1) . . .	2,397	1,651	2,132	145.2	112.4	21,385	18,365	21,569	66,827	57,389	67,403	116.4	99.1
POTATOES													
Luxemburg	40	41	41	99.5	98.9	4,308	3,794	4,421	7,180	6,323	7,368	113.6	97.5
Poland	6,825	6,770	6,546	100.8	104.3	737,899	624,573	667,013	1,229,807	1,040,934	1,111,666	118.1	110.6
Romania	505	489	487	103.3	103.7	42,367	30,082	41,815	70,610	50,136	69,691	140.8	101.3
Cyprus	5	4	7	125.2	74.2	378	338	452	629	564	753	111.6	83.6
Chosen	240	243	223	98.9	107.7	9,391	12,379	11,710	15,652	20,632	19,515	75.9	80.2
SUGAR-BEET													
Latvia	36	32	—	110.8	—	7,464	4,101	—	x,000 short tons				
Poland	277	245	456	113.1	60.7	56,582	40,836	86,995	373	205	—	182.0	—
Romania	92	107	94	86.2	97.4	14,287	14,957	15,032	2,829	2,042	4,350	138.6	65.0
									714	748	752	95.5	95.0

COUNTRIES	AREA					PRODUCTION									
	1934 — 1934/35	1933 — 1933/34	Average 1928 to 1932 — 1928/29 to 1932/33	% 1934 and 1934/35		1934 — 1934/35	1933 — 1933/34	Average 1928 to 1932 — 1928/29 to 1932/33	1934 — 1934/35	1933 — 1933/34	Average 1928 to 1932 — 1928/29 to 1932/33	% 1934 and 1934/35			
				1933 — 1933/34 = 100	Aver. — = 100							1933 — 1933/34 = 100	Aver. — = 100		
WINE	1,000 acres					1,000 Imperial gallons			1,000 American gallons						
Luxemburg 2) 3) .	3	3	3	98.6	81.2	3,073	1,246	1,337	3,690	1,497	1,606	246.6	229.8		
Romania 2) . . .	675	675	609	100.0	110.8	191,468	165,289	163,319	229,935	198,497	196,132	115.8	117.2		
Czechoslovakia . .	52	49	44	106.1	117.4	6,731	7,428	8,408	8,084	8,920	10,097	90.6	80.1		
Cyprus	120	118	106	101.7	113.4	3,149	2,762	3,889	3,781	3,317	4,671	114.0	81.0		
COTTON (GINNED)	1,000 centals					1,000 bales of 478 lb.									
Cyprus	9	5	12	189.7	74.3	7	4	11	2	1	2	204.3	64.9		
Chosen	473	433	459	109.3	103.1	650	669	645	136	140	135	97.1	100.7		
India	23,830	24,136	24,598	98.7	96.9	19,228	20,272	19,932	4,023	4,241	4,170	94.9	96.5		
Uganda	1,171	1,091	808	107.4	145.0	880	1,091	819	184	228	171	80.9	107.6		
A.-E. Sudan . . .	365	333	341	109.4	106.8	986	646	675	206	135	141	152.7	146.1		
FLAX						(a)			1,000 pounds						
Poland	262	235	271	111.5	96.7	679	587	986	67,944	58,686	98,555	115.8	68.9		
						(b)			1,000 bushels						
						1,221	993	1,288	2,180	1,774	2,301	122.9	94.7		
						(a)			1,000 pounds						
Romania	63	46	51	136.0	122.8	166	140	88	16,607	13,955	8,796	119.0	188.8		
						(b)			1,000 bushels						
						205	235	203	365	420	362	87.0	101.0		
						(a)			1,000 pounds						
Cyprus	6	2	2	300.9	335.4	6	5	2	598	516	215	115.8	278.0		
						(b)			1,000 bushels						
Argentina 1) . . .	6,919	4,878	6,641	141.8	104.2	43,167	31,747	40,074	77,084	56,691	71,560	136.0	107.7		
HEMP						1,000 pounds									
Poland	80	79	78	101.2	103.0	(a) 229	230	388	22,935	22,993	38,793	99.7	59.1		
						(b) 370	346	441	37,040	34,570	44,145	107.1	83.9		
Romania	113	118	101	95.4	112.1	(a) 512	574	466	51,210	57,397	46,604	89.2	109.9		
						(b) 392	417	294	39,233	41,743	29,355	94.0	133.6		
Chosen	66	67	70	99.0	94.1	(a) 399	435	445	39,915	45,547	44,482	91.7	89.7		
HOPS															
Poland	7	5 4)	7	129.7	106.5	32	25 4)	37	3,172	2,541 4)	3,694	124.8	85.9		
TOBACCO															
Poland	10	12	13	89.5	81.3	147	159	168	14,747	15,932	16,777	92.6	87.9		
Romania	25	25	59	99.2	42.1	130	138	370	13,020	13,844	36,989	94.0	35.2		
Cyprus	4	1	1	407.2	474.7	16	5	4	1,577	458	389	344.5	405.4		
Un. of South Afr. 5)	—	—	—	—	—	194	152	145	19,400	15,200	14,480	127.6	134.0		
SERICULTURE	1,000 ounces					1,000 pounds									
Cyprus	6)	2(6)	3(6)	87.1	58.6	7)	304 7)	337 7)	476 7)	304 7)	331 7)	476	91.8	63.9	

a) Fibre. — b) Seed. — 1) Area harvested. — 4) Area bearing. — 3) Production of must. — 4) Average 1928, 1929 and 1932. — 5) European crops only. — 6) Silkworm eggs for incubation. — 7) Cocoons.

TOTALS OF WORLD AGRICULTURAL PRODUCTION

The following totals have been obtained from the data in the tables published for each product in February, which have been revised and completed. With the name of each product is indicated the number of countries for which data for 1934 are at present available and also the percentage of their total production in 1933 to world production in the same year as published in the 1933-34 Yearbook, where they comprised nearly all producing countries, including the U. S. S. R., the 1934 figures for which are not yet available.

Crop, number of countries comprised in the total and percentages of world production	AREA						PRODUCTION									
			Average 1928 to 1932 and 1928-29 to 1932-33	Percentages for 1934 and 1934-35			British measures			American measures			Percentages for 1934 and 1934-35			
	1934 and 1934-35	1933 and 1933-34		1933 and 1933-34 = 100	Average 1928 to 1932 and 1928-29 to 1932-33 = 100		1934 and 1934-35	1933 and 1933-34	Average 1928 to 1932 and 1928-29 to 1932-33	1934 and 1934-35	1933 and 1933-34	Average 1928 to 1932 and 1928-29 to 1932-33	1933 and 1933-34 = 100	Average 1928 to 1932 and 1928-29 to 1932-33 = 100		
Thousand acres						Thousand centals			Thousand bushels							
Wheat (50 countries, 77 %)	234,660	243,237	250,205	96.5	93.8	2,012,675	2,216,482	2,256,986	3,354,392	3,694,063	3,761,568	90.8	89.2			
Rye (30 countries, 53 %)	46,279	46,106	47,195	100.4	98.1	524,675	588,396	540,059	936,923	1,050,710	964,394	89.2	97.2			
Barley (45 countries, 72 %)	56,862	60,040	64,337	94.7	88.4	614,977	642,079	706,652	1,281,225	1,337,687	1,472,218	95.8	87.0			
Oats (40 countries, 74 %)	89,757	95,802	100,736	93.7	89.1	849,012	991,755	1,141,564	2,653,143	3,099,212	3,567,362	85.6	74.4			
Maize (23 countr. 70 %)	121,559	136,233	134,745	89.2	90.2	1,220,869	1,696,711	1,823,122	2,180,124	3,029,846	3,255,577	72.0	67.0			
Rice (rough) (14 countries, 51 %)	108,650	110,605	109,575	98.2	99.2	1,518,587	1,636,694	1,595,365	3,374,571	3,637,023	3,545,182	92.8	95.2			
Potatoes (32 c. 71 %)	31,484	31,254	30,730	100.7	102.5	3,486,905	3,211,557	3,266,470	5,811,392	5,352,489	5,444,008	108.6	106.7			
Sugar-beet (24 countr. 92 %)	7,527	7,468	7,532	100.8	99.9	1,329,275	1,211,188	1,299,336	Thousand short tons							
									66,463	60,559	64,966	109.7	102.3			
Cotton-ginned (17 countries, 92 %)	67,846	70,038	78,551	96.9	86.4	101,938	117,690	118,750	Thousand bales of 478 lb.							
									21,326	24,621	24,843	86.6	85.8			
Linseed (22 countries, 74 %)	12,724	10,804	14,345	117.8	88.7	61,240	49,509	64,973	Thousand bushels							
									109,358	88,410	116,023	123.7	94.3			
Flax (fibre) (18 countries, 18 %)	885	729	969	121.4	91.3	3,303	2,732	3,907	Thousand pounds							
									330,254	273,154	390,660	120.9	84.5			
Hemp seed (7 c. 12 %)	235	237	230	99.0	102.2	915	897	891	91,492	89,728	89,067	102.0	102.7			
Hemp (fibre) (10 countries, 47 %)	541	519	558	104.3	96.9	3,589	3,402	3,783	358,914	340,174	378,315	105.5	94.9			
Hops (8 countr., 99 %)	124	114	136	108.7	90.9	1,153	1,036	1,206	115,302	103,618	120,593	111.3	95.6			
Tobacco (18 countries, 44 %)	2,162	2,592	2,844	83.4	76.0	18,195	21,500	22,836	Thousand American gallons							
									1,819,481	2,149,955	2,283,556	84.6	79.7			
Olive oil (9 countries, 96 %)	—	—	—	—	—	14,756	16,440	17,212	Thousand Imperial gallons							
									193,882	216,025	226,156	89.7	85.7			
Vines (16 countr. 82 %)	—	—	—	—	—	3,773,702	3,042,987	3,275,985	Thousand pounds							
									4,531,876	3,654,354	3,934,164	124.0	115.2			
Silk (7 countr. 90 %)	2) 6,490	2) 7,274	2) 7,383	89.2	88.0	832,682	955,127	954,131	Thousand pounds							
									832,682	955,127	954,131	87.2	87.3			

1) Wine. — 2) Thousand ounces of eggs in incubation. — 3) Cocoons.

FODDER CROPS

Germany: Crop condition of clover on 1 April 1935 was 3.0 against 3.1 at the same date a year ago.

Belgium: The fine weather in March favoured growth of grass and stock were in some places being put to pasture.

Irish Free State: The weather conditions during March were generally favourable and pastures made satisfactory growth.

France: As a result of the fine weather of the second half of March, sowings of fodder crops were made in good conditions. The autumn and early crops in the west will make up for the low fodder crops of last year. Meadows and pastures show a recovery in growth.

Great Britain and Northern Ireland: The weather during March was generally fine and warm for the time of year and pastures in all parts showed satisfactory signs of growth though there were some bare fields in exposed places.

Hungary: Toward 10 April sowing of mangels was in progress. Clover and alfalfa wintered satisfactorily and were already beginning to sprout. Growth of permanent meadows and pastures had begun but higher temperatures were desired for more rapid development.

Italy: Some damage to catch crops and meadows resulting from cold and drought was reported. Production from *marcite* was poor.

Poland: Crop condition of clover on 15 March was 2.9 against 3.2 on 15 December and 3.0 on 15 March 1934.

The following table indicates the fodder production of 1934 according to the estimates now published:—

	1934	1933	Average 1928-32	% 1934 1933 = 100'	Average = 100
<i>Area (000 acres).</i>					
Mixtures of barley and oats for seed	335	322	347	104.0	96.3
Other cereal mixtures for seed	75	251	206	29.9	36.5
Permanent meadows (hay)	9,389	9,389	3,708	100.0	102.5
Field peas for hay	57	47	1) 42	119.8	135.5
Seradilla for hay	205	181	1) 251	113.2	81.4
Clover (hay)	1,576	1,580	2) 1,482	99.7	106.3
Vetches and horse-beans for hay	173	165	1) 137	104.8	126.0
Other forage crops for hay	227	254	1) 178	89.4	127.6

(1) Average 1929 to 1932. — (2) Year 1932.

		1934	1933	Average 1928-32	% 1934 1933 = 100 Average = 100	
Production.						
Mixtures of barley and oats for seed		(ooo centals) 3,707	4,182	4,795	88.6	77.3
		(ooo bushels) 6,391	7,210	8,267		
Other cereal mixtures for seed		(ooo centals) 669	2,943	2,580	22.7	25.9
		(ooo bushels) 1,153	5,074	4,448		
Permanent meadows (hay)		(ooo centals) 158,549	169,359	197,747	93.6	80.2
		(ooo sh. tons) 7,927	8,468	9,887		
Field peas for hay . . .		(ooo centals) 910	939	1,892	96.9	102.0
		(ooo sh. tons) 45	47	1,45		
Seradilla for hay . . .		(ooo centals) 3,161	3,090	4,617	102.3	68.5
		(ooo sh. tons) 158	154	1,231		
Clover (hay)		(ooo centals) 41,653	49,559	60,070	84.0	69.3
		(ooo sh. tons) 2,083	2,478	3,003		
Vetches and horse-beans for hay		(ooo centals) 2,561	3,152	2,754	81.2	93.0
		(ooo sh. tons) 128	158	1,138		
Other forage crops for hay		(ooo centals) 3,773	2,663	2,472	141.7	152.6
		(ooo sh. tons) 189	133	1,124		

(1) Average 1929 to 1932. — (2) Year 1932.

Fodder production in 1934 was below both that of 1933 and the average of the preceding quinquennium. According to the report of the Central Statistical Office on the position on 15 March 1935, the correspondents in the *départements* of Volhynia and Pomerania and in some of the southern *départements* draw attention to a shortage of fodder and those in the *départements* of Stanisławów and Tarnopol to a scarcity of straw.

Switzerland: Speaking generally, permanent and temporary meadows do not give the same grounds for satisfaction as cereals. The effects of drought and the white worm attacks of last year are noticeable and the growth of meadows has suffered accordingly. Moles and other rodents have also caused damage to meadows. The growth of grass has been checked owing to frost and bad weather. Crop condition on 1 April 1935, according to the system of the Institute, was 97 in the case of permanent meadows and 96 in the case of temporary meadows (clover and alfalfa).

Argentina: Sowings of fodder cereals made good progress in March as a result of the generally favourable weather conditions.

(Telegram of 25 April): Fodder sowings are behindhand.

Algeria: The 1935 fodder crops at the end of March had a good appearance in eastern and central parts but they were mediocre or poor in Oran owing to the drought. Meadows and pastures are well supplied and grass was growing well as a result of the favourable weather.

The following table contains estimates of the fodder production of 1934:

	1934	1933	Average 1928-1932	Percentage 1933 = 100	Average = 100
<i>Area (acres).</i>					
<i>Temporary meadows:</i>					
For dry fodder (vetches and oats, alfalfa, etc) . . .	73,600	73,900	—	99.5	—
For green fodder or ensi- lage (barley and rye Alex. clover, alfalfa, mai- ze and sorghum)	29,200	24,100	—	120.9	—
<i>Total . . .</i>	<i>102,800</i>	<i>98,000</i>	<i>71,100</i>	<i>104.8</i>	<i>144.6</i>
<i>Permanent meadows:</i>					
Permanent meadows . . .	93,900	88,400	—	106.2	—
Stubble fields	236,000	244,000	—	96.7	—
<i>Total . . .</i>	<i>329,900</i>	<i>332,400</i>	<i>297,200</i>	<i>99.3</i>	<i>111.0</i>
<i>Production. (centals)</i>					
<i>Fodder from temporary mea- dows:</i>					
Dry fodder	1,860,000	1,669,000	1) 1,098,000	111.5	169.4
Green fodder or for ensi- lage.	1,269,000	1,360,000	—	93.3	—
<i>Fodder from permanent mea- dows:</i>					
Dry fodder from permanent meadows	1,613,000	1,537,100	3,956,000	105.0	103.0
Dry fodder from stubble fields	2,456,000	2,654,000		92.5	
<i>Total dry fodder, permanent and temporary</i>	<i>5,338,000</i>	<i>5,552,000</i>	—	96.2	—
<i>Total green fodder or for en- silage</i>	<i>1,860,000</i>	<i>1,669,000</i>	—	111.5	—
<i>(short tons)</i>					
<i>Fodder from temporary mea- dows:</i>					
Dry fodder	93,000	83,500	1) 54,900	111.5	169.4
Green fodder or for ensi- lage.	63,400	68,000	—	93.3	—
<i>Fodder from permanent mea- dows:</i>					
Dry fodder from permanent meadows	80,700	76,800	197,500	105.0	103.0
Dry fodder from stubble fields	122,800	132,700		92.5	
<i>Total dry fodder, permanent and temporary</i>	<i>266,900</i>	<i>277,600</i>	—	96.2	—
<i>Total green fodder or for en- silage</i>	<i>93,000</i>	<i>83,500</i>	—	111.5	—

1) Not including «miscellaneous fodder» (Napier grass, clover, sainfoin, etc.) which occupied an average of 2,184 acres in 1923-32.

Egypt: The growth of *berسيم* crop is satisfactory. The third cutting is in progress in all the early cultivations. Forming of seeds and maturity are in progress in areas which are cultivated in Upper Egypt. The area under *berسيم* for this season is estimated at 1,644,000 acres, compared with 1,561,000 in 1933-34 and 1,594,000 as the average of the five preceding seasons. Percentages: 105.3 and 103.1.

LIVESTOCK AND DERIVATIVES

The Pig Crop in Germany.

Numbers of pigs in Germany (1).

(thousands).

CLASSIFICATION BY SEX AND AGE	5 March 1935	5 Dec. 1934	4 Sept. 1934	4 June 1934	5 March 1934	5 Dec. 1933	7 June 1933	3 March 1933	1 Dec. 1932	1 Sept. 1932	1 June 1932	1 March 1932	1 March 1931
<i>Totals</i>	20,233	23,146	25,047	22,368	22,010	23,890	21,174	20,238	22,859	24,176	21,289	20,633	21,790
<i>Sucking pigs under 8 weeks old</i>	4,919	4,508	6,348	5,283	5,715	5,125	5,139	5,152	4,834	6,326	5,501	5,013	5,750
<i>Young pigs from 8 weeks to 6 months old</i>	9,574	10,040	10,594	10,436	10,022	10,353	9,752	9,379	9,884	10,341	9,832	9,976	10,231
<i>Pigs from 6 months to 1 year old</i>	3,993	6,326	6,072	4,787	4,440	5,984	4,450	3,966	5,812	5,435	4,109	3,853	3,939
Of which:													
Boars for service	46	46	42	44	48	49	46	46	49	46	46	47	57
Sows for breed- ing (total)	554	452	471	547	561	549	653	528	485	517	607	549	706
Sows covered	(333)	(244)	(229)	(338)	(327)	(306)	(422)	(316)	(259)	(255)	(374)	(323)	(425)
Other swine	3,393	5,828	5,559	4,196	3,831	5,386	3,751	3,392	5,278	4,872	3,456	3,257	3,176
<i>Pigs 1 year old and over</i>	1,737	2,272	2,033	1,862	1,833	2,427	1,833	1,741	2,329	2,074	1,847	1,791	1,876
Of which:													
Boars for service	57	61	72	71	66	62	73	66	61	75	73	67	62
Sows for breed- ing (total)	1,236	1,328	1,483	1,519	1,433	1,466	1,511	1,381	1,384	1,559	1,534	1,425	1,511
Sows covered	(724)	(822)	(768)	(949)	(841)	(923)	(978)	(832)	(851)	(832)	(938)	(875)	(927)
Other swine	444	883	478	272	334	899	249	294	884	440	240	299	29

1) Excluding the Saar territory.

Pig Population of Denmark.

The following table shows the number of pigs on 1 March 1935 compared with those in previous years.

Though the total number of pigs at 1 March 1935 is still smaller than the number at the same date last year, that of sows is greater and this increase is most noticeable for the first time in the number of sows in farrow, indicating an expansion in breeding. After reaching a record figure of nearly 5.5 million in 1931

Number of Pigs (in rural communes only).
(thousands)

Classification	1935		1934							1933		
	1 March	15 Jan.	1 Dec.	15 Oct.	1 Sept.	16 July	1 June	14 April	1 March	15 Dec.	14 Oct.	15 July
Bears for reproduction	20	19	20	20	21	21	22	22	22	23	24	25
Sows in farrow for first time . .	89	72	48	29	40	66	82	68	59	36	38	41
Other sows in farrow	166	181	190	187	180	165	166	170	178	176	206	239
Sows in milk	81	77	74	82	78	89	82	78	74	90	102	115
Sows not yet covered (and not for slaughter) . .	19	19	21	25	29	24	23	21	23	34	34	34
Sows for slaughter . . .	14	9	11	10	10	11	10	11	13	26	25	15
<i>Total of sows</i>	<i>369</i>	<i>358</i>	<i>344</i>	<i>333</i>	<i>337</i>	<i>355</i>	<i>363</i>	<i>348</i>	<i>347</i>	<i>362</i>	<i>405</i>	<i>444</i>
Sucking pigs not weaned	695	668	653	720	680	774	711	659	631	733	916	1,029
Young and adult pigs for slaughter:												
Weaned pigs under 35 kg. .	738	762	745	734	790	737	672	719	792	974	1,075	1,068
Pigs of 35 and under 60 kg. .	637	667	646	711	661	647	664	694	743	892	951	997
Fat pigs of 60 kg. and over .	508	451	621	590	503	523	595	639	649	740	825	827
<i>Total pigs</i>	<i>2,967</i>	<i>2,925</i>	<i>3,029</i>	<i>3,108</i>	<i>2,992</i>	<i>3,057</i>	<i>3,027</i>	<i>3,031</i>	<i>3,184</i>	<i>3,724</i>	<i>4,196</i>	<i>4,390</i>

the number of pigs has declined continuously. The contraction in rearing is largely the outcome of the fall in the prices of bacon nearly all of which is exported to Great Britain.

Export of bacon from Denmark.
(000 pounds)

	1935	1934	1933	1932	1931	1930	1929	1928	1927
January	35,146	38,112	58,996	76,679	72,284	51,543	40,830	54,003	44,572
February	34,127	37,378	55,865	73,109	64,972	43,311	41,472	50,311	42,180
March	40,356	63,563	74,713	68,245	51,302	42,079	56,029	49,450
April	47,077	54,089	79,003	66,326	46,615	45,649	50,682	39,304
May	43,965	57,024	52,850	65,623	57,094	49,162	52,010	49,555
June	44,242	61,029	83,190	62,768	51,052	41,774	50,332	49,692
July	46,974	54,692	78,547	71,143	53,404	43,857	46,681	47,279
August	41,759	52,166	64,760	65,999	56,433	49,005	46,941	47,010
September	40,560	52,039	73,785	65,517	61,540	49,443	45,482	47,375
October	36,187	48,462	74,262	74,612	67,870	45,405	49,677	46,130
November	36,386	45,860	63,783	74,593	64,823	51,820	49,319	46,000
December	39,343	44,638	64,615	77,181	70,487	48,165	48,653	56,406
<i>Annual mean . . .</i>	<i>...</i>	<i>492,339</i>	<i>648,423</i>	<i>859,296</i>	<i>829,213</i>	<i>675,474</i>	<i>548,661</i>	<i>600,120</i>	<i>564,953</i>

As a result of the restrictions on the placing of supplies on the British market bacon exports after reaching a record figure in June 1932, have with some fluctuations, been progressively reduced. The amounts exported in 1933 and 1934 were respectively only 75.5 % and 57.3 % of those of 1932 which were the highest recorded. The exports of February 1935 are again the lowest recorded for this period during the last eight years.

Livestock in France.

The following table gives the numbers of the various categories of livestock in France on 31 December of each of the years indicated:—

	1934	1933	1932	1931	1930	1929	1927	1920	1) 1913
	thousand head								
<i>Horses</i>	2,838	2,878	2,900	2,920	2,924	2,986	2,927	2,635	3,222
of which:									
3 years old and over.	2,333	2,351	2,354	2,358	2,350	2,345	2,342	2,096	2,550
under 3 years old	505	528	547	561	574	641	585	539	672
<i>Mules</i>	126	130	135	144	154	143	183	181	188
<i>Asses</i>	220	223	228	241	252	234	260	298	356
<i>Cattle</i>	15,704	15,830	15,643	15,434	15,467	15,631	14,941	13,217	14,788
of which:									
bulls	259	261	261	255	246	213	278	246	284
bullocks	1,346	1,362	1,375	1,389	1,362	1,318	1,444	1,338	1,843
cows	8,653	8,572	8,451	8,274	8,288	8,196	7,971	6,830	7,794
1 year old and over	3,139	3,192	3,096	3,094	3,049	3,033	3,137	2,830	2,854
under 1 year old.	2,307	2,443	2,461	2,421	2,522	2,871	2,112	1,973	2,012
<i>Sheep</i>	9,571	9,730	9,762	9,845	10,152	10,452	10,693	9,406	16,131
of which									
rams	192	200	207	212	213	244	213	203	294
ewes 1 year old and over.	5,929	5,981	5,980	6,009	6,163	6,087	6,610	5,818	9,288
sheep 1 year old and over	1,046	1,071	1,137	1,211	1,302	1,345	1,329	1,085	2,581
lambs under 1 year old	2,404	2,477	2,438	2,413	2,474	2,375	2,542	2,301	3,968
<i>Goats</i>	1,405	1,448	1,463	1,488	1,675	1,885	1,405	1,341	1,435
<i>Pigs</i>	7,044	6,769	6,488	6,398	6,329	6,102	6,019	4,942	7,036
of which:									
boars	39	39	39	37	34	34	34	29	39
sows	884	870	870	814	822	771	785	709	907
pigs for fattening, 6 months old and over	2,565	2,483	2,344	2,366	2,332	2,265	2,275	1,772	2,801
pigs for fattening under 6 months old	3,556	3,377	3,235	3,181	3,141	3,032	2,925	2,432	3,290

1) Excluding Alsace and Lorraine.

From the purely statistical point of view the stock-rearing situation in 1934 has been marked by a regression in the number of cattle (0.8 %) in contrast to the previous advance, a diminution in the numbers of sheep (1.6 %), goats (3 %) and horses (1.4 %), more marked than in the previous years and a further increase in that of pigs (4.1 %), practically equivalent to that in 1933; mule and asses continue to decline in numbers with the same regularity, though the decrease is a little less than in previous years.

These numerical changes, however, are not sufficient to characterize the actual situation of the various branches of the industry. Other and rather complex factors must for this purpose be introduced; the amounts of net imports of animals from abroad and internal consumption of meat have a direct influence on the numbers of livestock within the country and an indirect one on the position of stockrearing.

Imports of horses, mules and asses, of cattle, of pigs and of meat animals other than sheep showed a further heavy fall in 1934, to the extent of 63 % for

horses, 70 % for cattle, 53 % for pigs and pork and 28 % for beef; this decrease is due to the reduction of the import quotas, which have practically ceased to be granted save for the Saar territory, to their stricter application, save for some still appreciable excesses, to the lowering of prices on the French market, and finally, for horses, to the expiry on 15 April 1934, of the Franco-Belgian commercial treaty of 28 February 1928. Exports have shown an appreciable recovery, notably of cattle, of which shipments more than doubled, and of pigs (5,200 in 1934 against 100 in 1933). Imports of sheep, almost entirely from Africa to the north of France, remained practically stationary; exports, which are insignificant, diminished. In all, the value of net imports, deducting exports, of living animals and of meat decreased by 38 % with respect to 1933. The market for cattle and livestock products, however, underwent, in consequence of the excess import, a net loss that, though reduced by nearly 60 %, amounts to 300 millions francs.

It is more difficult to determine the consumption of meat. Statistics of slaughterings for meat from thirty three towns supplying practically half of the national consumption, indicate, however, a further increase of about 4 % with respect to 1933; such an increase would be practically of the same order as that shown in the two previous years by consumption after the appreciable fall in 1930 and 1931 but it must be noted that, while relatively heavy in the first quarter, the increase was insignificant in the third quarter and seems even to have given way to a decrease in the fourth quarter, due to the rather high temperatures of the autumn.

There was a decrease of almost 10 % in the number of sheep, lambs and goats slaughtered, which is appreciably below the figures of 1928 and 1929, and a decrease of 5 % to 6 % in the number of horses slaughtered for meat. In this connection there may be noted a marked recovery of more than 10 % in pig slaughterings, which were reduced in 1933 and a further increase in those of both adult and young cattle, but less marked than last year; the number of bullocks slaughtered was 7 % greater than in 1933 and practically the same as in 1929, while there was an increase of 6 % for calves, of which the number sent for slaughter was the highest ever recorded (in 1933, the increase was 12 and 9.5 %).

These percentages cannot give an exact indication of the variations in consumption since they refer to slaughterings in the principal towns only and it is necessary to know the average weight of the animals slaughtered, which seems to have somewhat diminished for cattle and pigs and increased for sheep, but they indicate at least the direction of the variations. The heavy decrease in imports of horses for slaughter has certainly helped to reduce the consumption of horsemeat but in general it seems necessary to seek the principal cause of the variations recorded in the fall in pig prices, which was relatively heavy in 1933 and in the fairly appreciable fall in those of cattle, while for sheep the decline was relatively small.

If the prices of sheep on La Villette market (cf. following table) are taken as basis of comparison the indices for other live meat are as follows: in January 1933 for beef 45.5, for veal 78.5 and for pork (live weight) 45.8; in January 1934 for beef 42.9, for veal 70.0 and for pork 34.4; in December 1934 the indices declined further to 38.8 for beef, 61.8 for veal and 24.9 for pork.

Monthly prices of live meat at La Villette (Paris).
(extra quality, francs per net kilogram)

	Dec. 1934	Sept. 1934	July 1934	May 1934	Feb. 1934	Jan. 1934	Dec. 1933	Jan. 1933
Bullocks. from	6 —	7.30	7 —	7.60	6.90	7.30	7.50	8 —
to	6.30	7.60	7.50	7.90	7.30	7.80	7.80	8.30
Heifers from	6.30	7.70	7.40	8 —	7.20	7.60	7.80	8.30
to	6.60	8 —	7.80	8.30	7.60	8.10	8.10	8.60
Cows from	5 —	6.20	5.90	6.70	5.90	6.40	6.80	6.90
to	5.40	6.50	6.50	7.10	6.40	7 —	7 —	7.20
Bulls from	4.30	5.50	5 —	5.30	4.90	5.40	5.80	6.10
to	4.90	5.70	5.30	5.70	5.40	5.90	6 —	6.40
Calves. from	9.20	9.80	9.30	11.40	12.60	12 —	10.50	13 —
to	10.20	10.30	10.20	12.20	13 —	13 —	12 —	15.50
Sheep from	15.50	15.90	15.50	16.80	16.90	17.20	16.90	17.60
to	16.20	16.20	16 —	17.20	18.10	18 —	17.80	18.20
Pigs (live weight) from	3.70	4.80	4.80	5 —	5.70	5.90	6 —	8 —
to	4.20	5.30	4.90	5.30	5.90	6.20	6.30	8.40

Though the decline is for mutton only 9 % with respect to December 1933 and 11 % with respect to January 1933 it is 20 % and 25 % respectively for large stock, a little less for heifers, a little more for cows and bulls, from 14 % to 31 % for calves, and, finally, from 36 % to 52 % for pigs. These price variations sufficiently explain the variations in consumption, which appear to have increased and to have affected cattle and pigs rather than sheep. With these elements — changes in imports from abroad and in consumption — it is possible to examine more closely the position of the different branches of stockrearing.

As regards *horse* rearing the decline of horsemeat consumption corresponds closely to that in net imports from 22,200 head in 1933 to 6,600 head in 1934); there has, however, been a further and rather appreciable fall in internal supplies. This fall would seem to be due rather to a decline in births in 1932 and 1933 and there appears to have been an increase in births in 1934 so that, contrary to what appears from a rough survey of the statistics, there would seem to have been a recovery in horse-rearing in 1934. This branch of the livestock industry incontestably benefited from the improvement in foreign exchange; though the increase in exports appears to be only an insignificant benefit, by reason of the fall in prices on the internal market, the unfavourable exchange balance was reduced from 28 million francs in 1933 to 4 million in 1934.

The rearing of *mules* and *asses* continues, on the other hand, to decline. Hindered by the relatively high prices on the French market, the export of mules, which remained fairly large in the two preceding years, fell from 8,500 head in 1933 to 6,900 in 1934, involving a decrease of 8.6 million francs or 36 %.

Cattle and *sheep* rearing suffered from rather unfavourable weather. Calving and lambing were not very satisfactory; the dry, cold winter and the drought of summer hindered fodder production and in a number of areas fattening of cattle was difficult for the economic crisis allowed only a restricted employment of concentrated feed. These circumstances partly explain the decrease in the number of young cattle and during the year and also, to a certain extent, that in

the number of bullocks and heifers of over one year of which the temporary difficulties of stockrearing have led to the slaughtering in larger numbers.

If the statistical position of *cattle* is examined more closely two concomitant phenomena appear: on the one hand, the slowing down of the increase in the number of cows (2.1 % in 1932, 1.4 % in 1933 and only 0.9 % in 1934); on the other hand the relatively heavy decrease in the number of calves born during the year (0.7 % in 1933 and 5.6 % in 1934) and the slight decrease in the number of bullocks and heifers of one year and over (1.7 % against an increase of 3.1 % in 1933) so that the total number of rearings was reduced by 3.5 % with respect to that of the previous year and was even 1.3 % below the previous minimum, attained in 1931 after the very heavy fall of 1929 and 1930. These two phenomena cannot be attributed solely to the external factors above indicated: unfavourable calving conditions, increased consumption and tendency of rearers to sell for slaughter; they show fairly clearly a movement of the livestock industry toward an equilibrium that has in recent years been compromised, with a resulting overproduction of meat and dairy products.

The process of adaptation is, however, a slow one, as is shown by the persistent increase in the number of cows, due in part to the fact that rearers are more readily selling oxen for slaughter and even bulls, bullocks and heifers than milch cows; while the number of cattle in 1934 included fewer oxen and bulls than in 1927 and practically the same numbers of bullocks and heifers of over one year, the number of cows increased in the same period by 600,000, or 8.5 %, and the proportion to the total of cattle excluding those under one year rose from 62.1 % to 64.6 %. Thus, despite the improvement in external trade, which in any case leaves a deficit of 31 million francs, and the recovery of consumption, which appears to have returned practically to the 1929 level if it has not exceeded it, cattle-rearing is still undergoing a serious crisis, marked by the decline in prices received by the producer, which can be attenuated only slowly. Prices received by the producer have fallen especially in the areas of medium and small enterprises, where the decline in some cases attained 30 % during 1934 for oxen and cows, against 23 % in Normandy, 14 % in Limousin and only 11 % in the Charollais, areas that produce especially choice meat and grass-fed animals and that have particularly benefited from the recovery in exports.

The *sheep* rearing situation was characterized in 1934 by a more or less marked decrease in all categories: rams, ewes, wethers and lambs. When the decrease of 9 % in slaughterings in 1933 and the increase in the number of animals under one year is in this connection taken into account, it would appear that the consumption of wethers and ewes increased by over 100,000 head while that of ram- and ewe-lambs under one year decreased by between 200,000 and 300,000 head; on the one hand, it would follow that the smaller number of births accounts for 300,000 to 400,000 head or over 10 % of the number of births in 1933 and that the decrease in consumption by weight has been, much less than is shown by the statistics of slaughterings (in fact, the returns of the slaughtering tax for the first nine months of 1934 were only 5.5 % less than the returns for the same nine months of 1933). These conclusions can be taken only with considerable reserve but it is certain that the year 1934 marks

an appreciable regression in the numbers of sheep and especially in that of those under one year, and that, on the other hand, the market for sheep has experienced the smallest decline, prices having scarcely changed during the second half-year (those of December 1934 and even those of March 1935 were practically the same as those of July 1934), which appears to exclude the existence of marked underconsumption.

Heavy overproduction of *pigs* would appear, on the other hand, to have occurred. Despite the revival of consumption, which appears to have accounted for over 100,000 head, total numbers have undergone a further increase of nearly 300,000 head; the number of sows, which remained stationary in 1933, showed a further slight increase and the number of young pigs born in the second half of the year increased by 5.3 %, despite the fall in pig prices, and reached an absolute maximum. On the other hand, though greatly reduced, imports remain quite appreciable, with 78,000 live pigs and 31,000 quintals of pork, representing 5 % to 6 % of the total consumption of the country.

Summarizing, the year 1934 was characterized by an aggravation of the economic condition of the livestock industry in France, despite the contingent of imports, the appreciable revival of exports and an increase in consumption of meat. The Government has been concerned with remedying this situation and a recent bill has contained plans for the amelioration of market conditions, the increase in the numbers of abattoirs and assistance to rearers and exporters.

Horse-rearing, however, appears to be recovering and the statistical position of cattle-rearing permits of expectations of progressive adjustment of production to the absorptive capacities of the market. The situation of the mule, ass and pig rearers on the other hand, remains serious and shows no signs of improvement. Conditions during the winter and the fairly satisfactory fodder production will attenuate the difficulties of cattle and sheep rearers.

Consumption would seem practically stationary and prices underwent no appreciable variations in January and February 1935.

Slaughterings in Norway.

The following are the numbers of animals slaughtered under inspection during the last five years.

Classification	1934	1933	1932	1931	1930
Cattle	172,466	197,972	189,483	168,488	171,277
Young calves	157,025	166,382	155,635	142,713	143,830
Fat calves	61,337	67,010	66,152	58,922	62,207
Sheep	339,169	390,186	371,297	349,649	298,480
Goats	15,120	13,033	12,937	14,433	14,518
Pigs	362,524	318,954	281,591	315,304	258,960
Horses	4,623	4,188	3,358	3,725	5,605

Current information on livestock and derivatives.

Irish Free State: Supplies of fodder, grain and roots are adequate to meet all normal requirements. Milk yields during the month were above average.

France: The condition of animals, after benefiting from the favourable conditions of the second half of March, improved still further. In some areas, live stock was

turned out to pasture at the end of March but had to be kept indoors again during the bad weather of the early part of April. The mild weather of the second half of March improved the milk yield.

Great Britain and Northern Ireland: Stock was turned out to grass earlier than usual and farmers were thus able to conserve their somewhat short supplies of fodder.

In general, milk yields were normal for the time of year.

Netherlands: Feeding conditions of milch cows in March were fairly good. The milk yield increased generally. It was 5 to 10 % above normal in Groningen, 10 % in Friesland, 5 to 10 % in Drenthe and Overijssel, 5 % in Guelder, a small percentage in Zeeland, 10 to 15 % in several parts of North Holland and 5 to 10 % in the sandy areas of North Brabant. It fell by 5 % in Utrecht and Limburg and to some extent also in North Brabant, while it was normal in South Holland and in part of North Holland.

United States: Mohair production in 1934, including kid hair, in six leading mohair States was 12,409,000 lb., compared with 15,895,000 lb. in 1933. The decline was due to a 22 % decrease in the number of goats clipped and a 7 % decrease in the average clip per goat.

The figures below show the number of goats clipped, mohair produced, and average clip per goat:

	1934	1933	1931
Goats clipped (000 head)	3,359	3,937	4,089
Mohair produced (000 lb.)	12,409	15,895	16,495
Average per goat (lb.)	3.7	4.0	4.0

Algeria: Condition of animals and feeding at the end of March was satisfactory everywhere. Grass is plentiful in meadows and pastures, including those in the south, and weather is favourable.

French Morocco: Temperatures were very low in February but rose in March, and at the end of the month, they were rather above average. Rainfall, which was normal in February, was insignificant in March. The volume of streams and the level of the watertable and tanks fell rapidly in March. Growth of pastures, after having been checked by the cold, recovered in March and provided generally a good bite for animals. In the southern coastal regions, however, fodder supplies were small or reduced by the drought. The condition of live stock continued satisfactory.

Union of South Africa: Rains were very irregular in the Cape Province during February. General and soaking rains occurred only in the North Eastern districts and Transkeian territories. For the rest it was fairly hot and dry and critical conditions already prevailed in some of the eastern border districts. Many farmers were compelled to trek in search of water and grazing. Stock, however, were still in fair to good condition, but sheep were infected with internal parasites and blue-tongue was fairly generally reported. In some of the Karroo and Cape North Western districts water shortage was being complained of. Dikkop and gallsickness appeared to be fairly general in the latter area.

Soaking rains fell towards the end of the month over the greater portion of Natal. Stock were in excellent condition and grazing was abundant.

In the Orange Free State the condition of stock was unsatisfactory. Grazing was very parched and internal parasites and blue-tongue were reported generally.

Although drought caused much damage in the Transvaal, conditions were generally satisfactory, except in portions of the lowveld area where a water shortage and scarcity of grazing were reported.

TRADE

COUNTRIES	FEBRUARY				SEVEN MONTHS (August 1-February 28)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1935	1934	1935	1934	1934-35	1933-34	1934-35	1933-34	1933-34	1933-34
Wheat. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Bulgaria	0	35	0	0	0	1,576	0	0	2,242	0
Hungary	507	888	0	0	3,652	10,115	0	0	15,496	0
Lithuania	49	0	0	0	157	0	0	0	0	0
Poland	13	44	0	0	315	223	9	505	1,596	507
Romania	0	2	0	0	0	137	2	7	141	17
Yugoslavia	0	0	0	0	1,874	209	2	0	553	0
U. S. S. R. . . . .	...	...	—	—	2) 1,179	2) 15,781	—	—	19,271	—
Canada	4,323	3,907	0	0	61,681	63,498	—	7	101,960	—
United States	2	1,601	1,237	441	1,327	6,173	9,707	3,920	11,995	6,757
Argentina	10,254	9,998	—	—	63,370	41,204	—	—	84,074	—
Chile	2	51	2	0	529	64	35	765	582	765
Syria and Lebanon	37	4	0	0	212	395	11	123	423	198
Algeria	514	686	7	22	4,500	4,220	194	229	6,493	340
French Morocco	168	212	0	0	2,209	3,318	0	0	5,082	0
Tunisia . . . . .	...	...	...	...	3) 606	3) 470	3) 139	3) 434	1,124	1,122
Australia	4,394	4,508	0	0	26,863	22,392	0	0	36,090	0
New Zealand . . . . .	...	...	...	...	2) 0	2) 181	2) 4	2) 57	181	119
<i>Importing Countries:</i>										
Germany	2	476	525	1,431	117	9,815	5,512	9,806	12,516	17,163
Austria	0	0	192	406	0	0	2,260	2,286	0	4,866
Belgium	123	75	1,841	2,112	1,241	723	16,275	15,238	1,459	26,226
Denmark	2	0	1,100	282	31	9	7,346	4,202	9	6,764
Spain	0	0	0	0	0	0	0	0	0	0
Estonia	0	0	0	0	75	0	0	0	0	0
Irish Free State	0	0	522	683	0	0	4,985	5,271	0	10,280
Finland	0	0	40	90	0	0	655	597	0	1,098
France	2,350	0	1,091	1,351	11,735	1,327	9,630	10,796	1,905	16,493
Gr. Brit. and N. Irel.	2	60	8,750	8,250	461	293	62,942	68,030	754	120,064
Greece	0	0	439	448	0	0	3,598	4,094	0	6,285
Italy	0	0	968	1,323	9	7	5,606	5,146	7	9,908
Latvia	2	0	0	0	60	0	0	0	0	0
Norway	0	0	384	64	0	0	2,295	1,967	0	3,761
Netherlands	0	97	974	351	7	556	6,746	8,503	1,303	13,649
Portugal	—	—	26	35	—	—	108	190	—	384
Sweden	0	0	64	82	159	—	589	688	375	1,089
Switzerland	0	0	545	578	2	4	6,003	6,449	7	10,558
Czechoslovakia	0	0	236	0	2	2	403	84	—	88
Ceylon	—	—	0	0	—	—	0	7	—	4
China	22	15	758	1,387	214	77	2,915	5,531	185	11,200
India	2	2	0	0	231	31	99	99	44	165
Japan	—	—	0	0	—	—	1) 5,174	1) 4,361	—	9,811
Egypt	22	0	...	...	24	7	591	2	9	7
Union of South Afr. . . . .	...	...	...	...	1) 0	1) 516	1) 15	1) 15	0	33
Totals	22,790	22,661	19,917	19,345	182,852	182,807	154,358	159,406	305,880	279,728
Rye. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Germany	0	207	1,032	57	51	5,335	3,170	2,019	6,945	2,196
Bulgaria	0	2	0	0	0	13	0	0	18	0
Estonia	0	0	0	0	494	0	22	0	0	0
Hungary	13	51	0	0	536	1,980	0	0	3,455	0
Latvia	159	0	0	0	1,702	0	0	0	0	0
Lithuania	139	24	0	0	496	49	0	0	49	0
Poland	388	774	0	0	6,255	6,305	0	229	10,479	229
Romania	0	0	0	0	0	0	0	0	0	0
Sweden	4	0	4	0	1,623	0	13	20	42	31
U. S. S. R. . . . .	...	...	—	—	2) 531	2) 1,656	—	—	3,397	—
Canada	0	0	2	0	384	1,426	11	0	1,444	0
Argentina	1,032	126	—	0	2,899	1,351	—	—	2,178	—
Algeria	0	0	0	0	24	15	0	0	22	0
<i>Importing Countries:</i>										
Austria	0	0	187	0	0	0	1,144	2	0	172
Belgium	0	0	42	209	4	11	1,085	3,501	11	4,804
Denmark	0	0	159	207	2	0	2,352	4,310	0	5,895
Finland	0	0	7	68	0	0	86	567	0	1,173
France	2	0	2	9	2	0	31	71	0	71
Italy	0	0	33	11	0	0	66	62	0	126
Norway	0	0	126	126	0	0	1,409	1,750	0	3,201
Netherlands	0	0	99	628	227	7	743	2,939	7	5,110
Switzerland	0	0	20	11	0	0	75	93	0	137
Czechoslovakia	0	0	0	2	4	15	13	13	18	20
United States	0	0	659	154	0	4	2,712	4,429	9	7,055
Total	1,737	1,184	2,372	1,482	15,234	18,167	12,932	20,005	28,074	30,220

1) 2) 3) See notes page 309.

COUNTRIES	FEBRUARY				SEVEN MONTHS (August 1-February 28)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1935	1934	1935	1934	1934-35	1933-34	1934-35	1933-34	1933-34	1933-34
Wheat flour. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Germany	0	507	20	4	560	3,236	71	44	5,578	55
Bulgaria	0	15	0	0	0	75	0	0	93	0
Spain	0	7	0	0	0	26	0	0	31	0
France	346	373	104	88	3,007	2,579	992	525	4,149	937
Hungary	46	95	0	0	465	961	0	0	1,466	0
Italy	390	300	0	18	2,566	2,295	66	243	3,849	320
Lithuania	0	2	0	0	0	20	0	0	22	0
Poland	46	44	0	0	249	128	0	0	7	0
Romania	0	0	0	0	0	7	0	0	55	0
Yugoslavia	2	7	0	0	24	35	0	0	282	0
Canada	606	644	18	7	5,426	6,449	247	55	10,690	176
United States	540	573	0	0	4,919	4,575	2	0	7,584	2
Argentina	187	238	—	—	1,307	1,351	—	—	2,425	—
Chile	0	7	2	7	42	7	37	22	22	55
India	24	22	0	0	165	163	2	15	260	22
Japan	75	82	—	—	3,673	3,146	11	51	5,569	101
Algeria	9	0	0	2	549	465	46	4	897	9
French Morocco	—	—	—	—	20	49	0	18	223	249
Tunisia	—	—	—	—	342	53	9	0	10,922	0
Australia	787	853	0	0	8,195	6,455	2	—	—	—
<i>Importing Countries:</i>										
Austria	0	0	55	71	0	0	344	467	0	992
Belgium	2	4	18	35	22	26	108	207	42	287
Denmark	0	0	33	24	11	9	287	354	13	584
Estonia	0	0	0	0	0	0	0	0	0	0
Irish Free State	0	0	33	57	0	0	366	838	0	1,091
Finland	0	0	64	79	0	0	489	639	0	1,146
Gr. Brit. and N. Irel.	212	205	635	800	2,022	1,911	5,432	6,845	3,245	11,674
Greece	0	0	2	0	0	2	20	9	0	13
Norway	0	0	29	35	2	2	611	525	4	930
Netherlands	0	0	66	55	2	4	529	556	7	880
Portugal	—	—	4	9	—	—	57	82	—	143
Sweden	0	0	0	0	0	0	0	4	0	4
Czechoslovakia	0	0	0	0	2	4	13	15	7	22
Ceylon	—	—	40	31	—	—	247	231	—	386
China	—	—	93	35	57	86	1,069	963	165	1,314
Indo-China	—	—	—	—	—	—	194	163	—	337
Java and Madura	—	—	—	—	—	—	589	571	—	1,087
Syria and Lebanon	7	4	2	64	31	64	37	439	77	888
Egypt	0	0	9	7	0	0	49	62	0	99
Union of South Afr.	—	—	—	—	0	0	0	7	2	209
New Zealand	—	—	—	—	0	0	90	82	2	—
Totals	3,279	3,977	1,227	1,435	33,656	34,181	12,023	14,063	57,737	24,023
Barley. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Bulgaria	0	33	0	0	0	313	0	0	522	0
Spain	0	24	0	0	0	44	0	0	44	0
Hungary	0	0	0	0	75	915	24	0	1,093	0
Poland	814	317	0	0	5,811	2,454	0	0	3,538	0
Romania	79	317	0	0	3,428	11,336	0	4	14,654	4
Czechoslovakia	55	115	0	0	922	904	2	2	1,116	2
Yugoslavia	20	7	0	0	461	148	0	0	176	0
U. S. S. R.	—	—	—	—	2,705	9,493	—	—	10,796	—
Canada	148	84	0	0	5,315	439	—	—	820	0
United States	99	240	161	0	1,700	1,704	3,602	11	2,351	152
Argentina	2,196	2,584	—	—	6,197	5,642	—	—	11,605	—
Chile	104	93	0	0	862	14	0	0	2,006	0
India	40	0	0	11	313	2	0	68	2	95
Algeria	106	152	13	15	1,080	747	529	44	1,144	496
Egypt	0	0	4	0	0	123	11	0	139	0
French Morocco	419	35	0	0	4,394	1,795	0	0	2,628	0
Australia	243	258	0	0	1,052	891	0	0	1,407	0
<i>Importing Countries:</i>										
Germany	0	0	547	677	0	0	8,536	4,222	2	7,648
Austria	0	0	134	128	0	0	1,155	1,111	0	2,588
Belgium	15	33	800	593	313	386	5,666	6,116	655	8,962
Denmark	97	168	40	66	1,338	637	675	829	977	1,314
Irish Free State	0	0	159	0	4	11	161	68	11	212
France	0	0	315	229	2	0	2,687	2,921	0	3,915
Gr. Brit. and N. Irel.	2	0	7	1,358	7	7	9,650	14,277	26	20,322
Greece	0	0	0	0	0	0	13	2	0	4
Italy	0	0	161	101	0	0	1,027	556	0	1,124
Norway	0	0	22	11	0	0	134	249	0	293
Netherlands	0	0	441	434	170	11	3,474	7,337	26	11,543
Switzerland	0	7	0	284	0	0	1,814	1,475	0	2,412
Syria and Lebanon	24	0	0	24	97	57	35	205	79	216
Tunisia	—	—	—	—	3	18	719	154	84	602
Totals	4,470	4,469	3,667	3,931	36,244	38,819	39,916	40,026	56,081	61,904

COUNTRIES	FEBRUARY				SEVEN MONTHS (August 1-February 28)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1935	1934	1935	1934	1934-35	1933-34	1934-35	1933-34	1933-34	1933-34
Oats. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Irish Free State . . .	0	0	0	0	0	20	0	0	20	0
Hungary	0	75	0	0	0	714	0	0	761	0
Lithuania	37	0	0	0	1	2	0	0	2	0
Poland	152	4	0	0	589	68	0	0	304	0
Romania	0	0	0	0	0	505	0	0	505	0
Czechoslovakia . . .	0	37	0	0	2	586	0	0	741	0
Yugoslavia	2	0	0	0	227	40	0	0	112	0
Canada	344	123	0	0	3,188	838	0	0	2,070	2
United States	2	2	677	0	22	99	2,800	18	123	71
Argentina	1,349	672	—	—	10,071	3,902	—	—	7,053	—
Chile	71	20	0	0	529	527	0	0	1,530	0
Tunisia	—	—	—	—	262	13	0	0	86	22
Australia	86	2	0	0	196	18	2	0	33	2
<i>Importing Countries:</i>										
Germany	2	141	767	4	11	1,759	2,295	79	1,931	97
Austria	0	0	0	15	0	0	71	115	0	450
Belgium	0	0	31	9	0	0	73	46	0	390
Denmark	77	7	101	26	628	26	556	229	26	373
Estonia	9	0	0	0	15	0	0	0	0	0
Finland	0	0	0	29	0	7	11	353	9	549
France	9	2	13	13	15	2	227	172	179	238
Gr. Brit. and N. Irel.	2	2	256	620	9	11	1,647	3,741	20	4,894
Italy	0	0	364	236	0	0	2,840	1,230	0	2,811
Latvia	0	0	0	0	0	0	0	2	0	2
Norway	0	0	2	0	0	0	2	0	4	2
Netherlands	2	11	62	68	4	18	410	639	20	1,142
Sweden	4	4	0	75	33	7	13	750	9	915
Switzerland	0	0	87	465	0	0	2,639	2,489	0	4,780
Algeria	20	7	2	4	101	49	82	101	64	282
Totals	2,168	1,109	2,462	1,564	15,973	9,211	13,668	9,968	15,602	17,022
Maize. — Thousand centals (1 cental = 100 lb.).										
COUNTRIES	FEBRUARY				FOUR MONTHS (November 1-February 28)				TWELVE MONTHS (Nov. 1-Oct. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1935	1934	1935	1934	1934-35	1933-34	1934-35	1933-34	1933-34	1933-34
<i>Exporting Countries:</i>										
Bulgaria	15	143	0	0	390	326	0	0	2,564	0
Hungary	11	57	0	0	55	699	0	0	1,056	0
Romania	214	690	0	0	3,735	2,643	0	0	10,115	0
Yugoslavia	412	946	0	0	5,972	3,389	0	0	11,810	2
United States	13	121	1,016	9	192	1,080	2,994	44	2,401	763
Argentina	5,062	6,195	—	—	32,679	44,677	—	—	127,357	—
Java and Madura . . .	—	—	—	—	209	470	—	—	924	—
Indo-China	—	—	—	—	4,087	1,841	—	—	8,439	—
Syria and Lebanon . .	0	0	0	4	0	0	0	7	0	66
Egypt	0	0	2	2	0	2	11	4	2	20
Union of South Afr. .	721	0	—	—	3,003	0	0	163	3,693	452
<i>Importing Countries:</i>										
Germany	0	0	814	644	0	0	3,754	1,889	0	7,452
Austria	0	0	802	683	0	2	3,984	3,369	2	10,448
Belgium	18	26	1,435	1,142	280	271	5,093	5,410	822	16,824
Denmark	0	0	412	311	0	0	1,658	1,404	0	4,586
Spain	0	0	26	9	0	0	302	730	0	1,307
Irish Free State . . .	0	0	331	362	0	0	1,799	1,528	0	6,543
Finland	0	0	51	172	0	0	152	575	0	1,312
France	0	7	1,843	1,162	0	11	6,887	5,703	22	13,607
Gr. Brit. and N. Irel.	115	214	4,764	8,360	664	564	22,725	24,299	2,116	66,597
Greece	0	0	110	2	0	0	207	18	0	37
Italy	0	0	159	174	2	0	505	811	2	3,874
Norway	0	0	2	146	0	0	666	966	0	3,084
Netherlands	0	2	1,329	1,691	0	7	7,132	7,736	13	22,011
Poland	0	0	0	2	0	0	0	22	0	60
Portugal	—	—	53	174	—	—	309	496	—	1,669
Sweden	0	0	24	388	0	0	176	1,724	0	3,106
Switzerland	0	0	108	157	0	0	644	553	0	1,792
Czechoslovakia . . .	0	0	159	216	0	0	780	1,164	0	5,150
Canada	0	0	143	265	0	0	1,777	1,307	2	4,090
Japan	—	—	—	—	—	—	0	0	—	2
Tunisia	—	—	—	—	—	—	0	0	—	101
Totals	6,521	8,401	13,583	16,075	51,268	55,982	61,570	59,924	171,344	174,935

1) 3) See notes page 309.

COUNTRIES	FEBRUARY				TWO MONTHS (January 1-February 28)				TWELVE MONTHS (January 1-Dec. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1935	1934	1935	1934	1935	1934	1935	1934	1934	1934

Rice. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Spain	73	53	0	0	84	62	0	0	1,010	0
Italy	344	247	9	4	763	661	9	4	3,598	44
United States	49	95	187	24	123	201	282	42	917	558
Brazil	—	—	—	—	—	—	—	—	734	—
India	4,564	2,745	454	419	6,733	4,493	620	888	31,244	8,858
Indo-China	—	—	—	—	2,421	1,944	—	—	28,296	—
Siam	3,417	3,106	—	—	7,106	5,836	—	—	43,202	—
Egypt	79	190	11	2	159	489	13	2	1,508	9
<i>Importing Countries:</i>										
Germany	33	22	362	333	68	44	728	725	745	6,341
Austria	0	0	57	46	0	0	112	101	97	633
Belgium	2	11	71	77	7	22	130	201	0	1,446
Denmark	0	0	4	9	0	0	13	15	0	15
Estonia	—	—	0	2	—	—	2	2	—	57
Irish Free State	0	0	2	2	0	0	7	7	0	14,171
France	62	46	1,065	730	97	146	2,167	1,316	661	2,862
Gr. Brit. and N. Irel.	11	13	112	137	26	26	185	278	174	313
Greece	0	0	49	37	0	0	97	84	0	448
Hungary	0	0	51	11	0	0	55	71	0	11
Latvia	0	0	0	0	0	0	2	2	0	15
Lithuania	0	0	0	2	0	0	2	15	0	106
Norway	0	0	11	9	0	0	18	126	2,013	3,629
Netherlands	159	84	143	75	373	148	218	0	157	974
Poland	4	18	0	0	18	24	29	115	—	575
Portugal	—	—	22	53	—	—	18	0	—	223
Sweden	—	—	9	0	—	—	71	57	0	397
Switzerland	0	0	37	35	0	0	137	66	0	1,497
Czechoslovakia	0	0	35	33	0	0	57	75	0	439
Yugoslavia	0	0	26	33	0	0	44	73	4	732
Canada	0	0	29	44	0	0	24	55	—	340
Chile	—	—	2	20	—	—	1,995	1,887	4	10,977
Ceylon	0	0	891	855	15	40	5,199	1,684	150	17,000
China	7	15	2,463	979	2	7	1,096	44	132	1,556
Java and Madura	—	—	—	—	2	2	0	18	1,457	152
Japan	—	—	—	—	2	2	0	49	0	428
Syria and Lebanon	0	0	46	26	0	0	49	49	9	355
Algeria	0	0	31	22	0	0	49	49	0	55
Tunisia	—	—	—	—	—	—	—	—	—	1,184
Union of South Afr.	—	—	—	—	—	—	—	—	—	49
Australia	13	15	2	4	29	22	7	22	244	73
New Zealand	—	—	—	—	—	—	—	—	—	—
Totals	8,817	6,660	6,181	4,023	18,033	14,174	13,537	8,135	116,356	76,459

Linseed. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Lithuania	18	7	0	0	42	40	0	0	141	0
Argentina	4,414	3,697	—	—	10,183	8,166	—	—	30,300	—
India	33	425	0	0	132	838	0	0	6,175	0
Tunisia	—	—	—	—	—	—	—	—	—	—
<i>Importing Countries:</i>										
Germany	0	0	315	613	0	15	664	1,208	2	6,986
Belgium	11	11	353	282	22	—	478	498	68	1,790
Denmark	—	—	71	37	—	—	88	55	—	359
Spain	—	—	49	24	—	—	71	42	—	366
Estonia	2	2	0	0	2	2	0	0	15	4
Finland	0	0	13	13	0	0	9	20	0	104
France	0	0	322	342	0	0	644	754	7	5,243
Gr. Brit. and N. Irel.	0	0	492	399	0	0	987	880	15	4,123
Greece	0	0	4	7	0	0	7	18	0	112
Hungary	0	0	0	0	2	0	0	0	13	0
Italy	0	0	185	128	4	26	234	207	0	1,422
Latvia	0	0	4	4	0	0	18	15	79	337
Norway	0	0	57	24	31	15	2,030	1,127	77	7,108
Netherlands	22	11	1,543	778	0	0	0	0	0	170
Poland	0	0	0	0	0	0	66	104	—	849
Sweden	—	—	44	88	—	—	20	55	0	556
Czechoslovakia	0	0	18	44	0	0	22	18	0	139
Yugoslavia	0	0	18	0	2	2	0	22	4	443
Canada	0	2	0	22	0	0	1,550	1,431	—	7,934
United States	—	—	1,118	853	—	—	29	35	2	434
Japan	—	—	—	—	—	—	37	20	0	560
Australia	0	0	18	11	0	0	—	—	—	—
Totals	4,509	4,164	4,613	3,669	10,442	9,102	7,025	6,566	36,898	39,127

1) 3) See notes page 309.

COUNTRIES	FEBRUARY				TWO MONTHS (January 1- February 28)				TWELVE MONTHS (January 1-Dec. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1935	1934	1935	1934	1935	1934	1935	1934	1934	1934
Butter. — (Thousand lb.).										
<i>Exporting Countries:</i>										
Austria	434	454	0	2	604	1,142	2	4	7,053	157
Denmark	22,042	23,691	7	0	45,607	49,183	13	15	330,311	20
Estonia	968	902	0	0	2,059	1,847	0	0	22,306	0
Irish Free State	659	556	0	0	1,358	1,058	2	46	56,886	84
Finland	1,892	1,325	0	0	3,781	3,799	0	9	24,467	13
Hungary	410	866	0	0	937	1,876	0	0	18,790	0
Latvia	1,700	1,806	0	0	3,472	3,616	0	0	34,615	0
Lithuania	769	692	0	0	1,673	1,314	0	0	21,321	0
Norway	62	79	0	0	236	291	0	2	547	2
Netherlands	4,502	3,754	0	18	9,570	7,617	190	44	81,320	1,173
Poland	280	121	0	0	443	514	0	0	9,782	9
Sweden	3,944	4,246	0	0	7,763	8,386	0	0	51,152	4
U. S. S. R.	—	—	—	—	—	—	—	—	41	70,689
Argentina	3,360	2,037	—	—	5,703	5,781	—	—	18,347	—
India	15	18	57	44	33	35	134	86	209	642
Syria and Lebanon	26	7	51	57	35	13	77	154	293	809
Australia	42,424	25,455	0	0	80,346	58,152	—	0	246,784	—
New Zealand	21,945	43,625	—	—	67,841	73,169	—	—	292,830	—
<i>Importing Countries:</i>										
Germany	0	2	13,876	7,214	0	2	29,800	14,650	9	136,165
Belgium	2	11	1,989	2,978	9	18	5,163	6,371	108	20,629
Spain	0	2	24	2	2	2	44	4	15	143
France	437	531	119	1,960	992	1,005	198	4,376	7,297	9,803
Gr. Brit. and N. Irel.	4,350	1,973	75,209	88,463	5,688	2,992	162,342	189,256	12,635	1,086,713
Italy	15	15	13	13	—	—	99	42	—	690
Switzerland	0	0	13	476	0	0	24	518	276	3,799
Czechoslovakia	0	0	75	11	0	22	174	64	22	653
Canada	31	18	7	421	66	49	11	434	428	2,873
United States	60	172	3,056	60	128	324	3,594	117	1,321	1,107
Ceylon	—	—	40	49	—	—	154	112	—	681
Java and Madura	—	—	—	—	—	—	866	996	—	10,313
Japan	—	—	—	—	—	—	—	—	—	64
Algeria	0	0	335	430	2	2	752	818	7	4,791
Egypt	11	7	64	57	15	11	179	123	82	789
Tunisia	—	—	—	—	—	—	—	—	18	1,975
Totals	110,338	112,365	95,164	102,603	238,387	222,253	204,075	220,364	1,299,920	1,286,132
Cheese. — (Thousand lb.).										
<i>Exporting Countries:</i>										
Bulgaria	441	71	0	0	624	174	0	0	2,652	0
Denmark	961	1,146	2	4	2,019	2,154	4	9	13,891	73
Finland	794	542	0	2	1,528	915	2	7	8,523	40
Italy	4,672	4,661	904	613	8,620	7,809	1,292	1,283	55,283	10,190
Lithuania	2	317	0	0	9	419	0	0	2,200	2
Norway	227	324	18	13	514	580	37	22	4,418	214
Netherlands	9,145	8,722	51	86	21,328	18,479	117	154	134,892	1,455
Poland	24	93	24	35	496	207	51	68	3,926	531
Switzerland	2,782	2,972	342	589	5,836	5,589	514	957	39,143	5,353
Czechoslovakia	99	46	174	238	181	104	337	403	1,995	2,628
Yugoslavia	108	152	4	4	265	265	9	7	4,045	57
Canada	313	238	55	77	600	1,473	123	130	61,167	946
Australia	1,493	1,206	2	4	4,475	2,500	9	9	12,467	77
New Zealand	19,273	20,210	—	—	44,794	48,301	—	—	222,266	2
<i>Importing Countries:</i>										
Germany	93	291	4,204	5,536	209	445	10,697	12,879	2,114	74,488
Austria	657	203	82	88	1,162	414	172	157	3,860	1,720
Belgium	15	22	3,236	3,415	35	60	7,326	7,289	353	47,818
Spain	7	7	243	157	15	18	346	285	123	2,482
Irish Free State	11	40	13	4	44	55	18	9	514	64
France	2,288	2,646	3,261	2,277	4,519	4,978	5,880	4,074	25,973	35,173
Gr. Brit. and N. Irel.	428	459	27,606	27,093	913	873	57,920	61,190	5,968	334,718
Greece	95	157	134	95	333	223	20	20	1,144	295
Hungary	7	18	0	0	11	31	0	0	176	0
Portugal	—	—	31	26	—	—	49	33	—	525
Sweden	—	—	128	128	—	—	212	194	—	1,248
United States	90	105	4,083	3,902	203	225	7,657	6,724	1,512	47,532
India	0	0	104	68	0	0	236	168	2	1,135
Java and Madura	—	—	—	—	—	—	115	101	—	1,656
Syria and Lebanon	18	7	108	37	—	—	196	190	534	1,221
Algeria	11	9	935	849	22	20	1,916	2,000	117	11,288
Egypt	7	4	551	553	15	13	1,116	990	126	6,537
Tunisia	—	—	—	—	—	—	—	—	84	2,641
Totals	44,061	44,669	46,295	45,900	98,569	96,452	96,574	99,352	609,468	592,109

1) 3) 4) See notes page 309.

COUNTRIES	FEBRUARY				SEVEN MONTHS (August 1-February 28)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1935	1934	1935	1934	1934-35	1933-34	1934-35	1933-34	1933-34	1933-34
Cotton. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
United States . . .	2,147	3,419	—	68	17,798	30,018	322	414	40,971	747
Argentina . . .	7	4	—	—	324	165	—	—	450	—
Brazil . . .	—	—	—	—	1,726	238	—	—	1,305	—
India . . .	1,470	1,371	123	51	6,274	4,797	631	437	12,791	972
Egypt . . .	767	785	—	—	5,141	5,864	—	—	8,927	—
<i>Importing Countries:</i>										
Germany . . .	62	137	558	822	586	814	3,272	5,639	1,235	9,539
Austria . . .	0	0	53	46	4	0	395	397	2	666
Belgium . . .	60	57	150	148	414	324	1,191	1,037	553	1,768
Denmark . . .	—	—	7	18	—	—	112	112	—	190
Spain . . .	11	2	249	229	37	13	1,131	1,299	35	2,698
Estonia . . .	0	0	9	7	0	0	68	51	0	88
Finland . . .	0	0	11	18	2	0	201	154	2	249
France . . .	44	31	306	589	392	227	2,826	4,916	423	7,101
Gr. Brit. and N. Irel. . .	49	33	919	1,307	437	344	7,033	9,222	606	14,266
Greece . . .	0	0	11	13	0	0	73	84	0	163
Hungary . . .	0	0	37	33	0	0	298	291	0	509
Italy . . .	0	0	441	511	2	7	2,211	2,937	7	4,716
Latvia . . .	0	0	7	7	0	0	68	66	0	108
Norway . . .	0	0	4	9	0	0	35	33	0	53
Netherlands . . .	0	0	53	71	2	7	494	567	7	983
Poland . . .	0	0	101	117	7	4	833	908	4	1,519
Portugal . . .	—	—	53	40	—	—	284	287	—	498
Sweden . . .	—	—	33	75	—	—	397	399	—	661
Switzerland . . .	0	0	51	57	0	0	337	364	0	597
Czechoslovakia . . .	7	4	99	207	49	57	933	1,107	97	1,845
Yugoslavia . . .	0	0	18	20	0	0	181	143	0	289
Canada . . .	—	—	62	112	—	—	802	891	—	1,506
China . . .	26	44	64	265	306	644	855	1,495	847	2,835
Japan . . .	—	—	—	—	276	137	8,616	6,737	384	17,163
Algeria . . .	—	—	0	0	—	—	2	9	2	11
Totals . . .	4,650	5,887	3,459	4,840	33,781	43,662	33,601	39,996	68,648	71,745

Wool. = (Thousand lb.).

COUNTRIES	FEBRUARY				SEVEN MONTHS (August 1-February 28)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1935	1934	1935	1934	1934-35	1933-34	1934-35	1933-34	1933-34	1933-34
Wool. — (Thousand lb.).										
<i>Exporting Countries:</i>										
Irish Free State . . .	1,085	1,407	33	22	6,261	11,806	450	342	16,810	697
Hungary . . .	11	18	—	84	1,292	884	2,000	1,173	6,270	2,286
Argentina . . . { a)	35,384	33,030	—	—	120,379	170,557	—	—	260,459	—
Chile . . . { b)	2,727	1,834	—	—	13,067	9,451	—	—	15,959	—
India . . .	9,207	8,909	0	0	10,459	14,048	75	0	27,174	4
Syria and Lebanon . . .	1,687	3,962	963	223	20,355	33,407	2,864	1,556	54,798	4,072
Algeria . . .	1,129	24	4	0	4,405	2,452	77	302	4,799	324
Egypt . . .	375	571	104	86	3,532	4,120	1,146	957	9,270	2,350
U. of S. Africa . . . { a)	141	245	4	22	880	1,422	13	35	2,721	57
Australia . . . { b)	37,329	28,803	—	—	122,538	162,225	1) 0	2) 0	228,426	0
New Zealand . . . { a)	974	681	—	—	3,430	3,499	1) 542	1) 637	6,228	1,519
Italy . . . { b)	94,165	74,292	508	904	492,744	563,999	1,947	3,252	703,392	7,035
France . . . { a)	5,465	7,460	2	64	32,664	41,242	90	269	65,852	342
Japan . . . { b)	30,457	44,608	—	—	69,084	108,671	2) 0	2) 0	228,155	0
Totals . . .	4,330	3,609	—	—	13,744	15,607	2) 13	2) 2	47,120	15
<i>Importing Countries:</i>										
Germany . . . { a)	212	88	18,250	42,704	4,709	990	80,786	136,632	2,899	285,918
Austria . . . { b)	117	410	6,742	8,733	1,369	4,323	25,660	36,548	5,935	62,340
Belgium . . . { a)	51	46	2,299	2,094	941	1,61	8,541	11,773	688	18,045
Denmark . . . { b)	13,047	6,887	19,380	16,826	47,552	55,645	92,367	101,947	96,175	173,077
Spain . . .	1,956	3,192	240	518	8,691	17,692	1,689	3,829	24,134	5,463
Finland . . .	9	29	348	655	229	143	2,632	2,998	225	5,031
France . . .	289	1,140	703	421	1,459	3,177	2,676	2,374	4,367	7,132
Gr. Brit. and N. Irel. . .	31	0	456	412	176	11	2,624	2,745	42	5,615
Italy . . . { a)	—	4,416	42,261	38,585	21,727	31,345	154,611	195,725	51,035	374,902
Norway . . . { b)	31,573	44,703	78,388	122,436	133,283	183,996	350,801	477,274	356,872	843,540
Netherlands . . . { a)	46	0	403	249	346	653	3,003	1,627	1,369	4,612
Poland . . . { b)	97	24	8,082	19,458	507	317	21,352	61,399	1,243	142,633
Sweden . . .	62	478	983	1,938	1,025	2,264	5,408	10,849	4,092	21,129
Switzerland . . .	93	172	170	185	739	897	1,065	1,188	1,779	2,332
Czechoslovakia . . .	22	582	624	1,098	2,363	3,430	3,089	5,137	4,482	9,081
Yugoslavia . . .	168	163	802	789	1,063	977	3,739	4,550	1,398	6,570
Canada . . .	4	35	3,565	4,021	75	631	12,659	19,670	745	38,111
United States . . .	—	—	1,823	3,034	—	—	9,295	12,476	—	22,882
Japan . . .	11	40	2,447	1,847	106	187	10,805	10,038	247	20,130
Tunisia . . .	99	84	2,972	3,816	1,034	1,155	13,633	17,906	2,507	35,285
Totals . . .	276,096	274,283	206,822	285,733	1,147,575	1,461,360	944,687	1,323,455	2,251,924	2,486,081

a) = Wool, greasy. b) = Wool, scoured. — 1) 2) 3) See notes page 300.

COUNTRIES	FEBRUARY		EIGHT MONTHS (July 1-Feb. 28)		TWELVE MONTHS (July 1-June 30)	COUNTRIES	FEBRUARY		EIGHT MONTHS (July 1-Feb. 28)		TWELVE MONTHS (July 1-June 30)
	1935	1934	1934-35	1933-34	1933-34		1935	1934	1934-35	1933-34	1933-34
Coffee. — (Thousand lb.).						Tea. — (Thousand lb.).					
EXPORTS.						EXPORTS.					
<i>Exporting Countries:</i>						<i>Exporting Countries:</i>					
Brazil	1,989	3,893	862,584 ¹⁾	1,094,429	2,097,337	Ceylon	15,514	15,379	129,921	120,774	210,494
India . . . . .	...	...	5,124	9,575	20,565	China	8,278	6,089	69,805	70,872	104,153
Java and Madura . . . . .	...	...	44,681 ¹⁾	40,118	64,360	India	21,971	20,380	282,418	274,338	311,611
<i>Importing Countries:</i>						Java and Madura . . . . .	...	...	64,995 ¹⁾	59,386	107,044
Germany	0	15	66	176	234	Japan . . . . .	...	...	22,456 ¹⁾	22,849	31,720
Belgium	4	42	90	179	284	<i>Importing Countries:</i>					
France	0	0	7	55	71	Belgium	0	0	7	4	9
Gr. Britain and N. Ireland	2,685	3,622	12,203	20,990	33,217	Irish Free State	0	7	251	26	159
Netherlands	802	2,022	8,331	11,200	18,470	France	2	2	20	22	40
Portugal	245	104	1,792	1,839	3,278	Gr. Brit. and N. Irel.	3,907	4,680	43,345	54,922	78,736
Switzerland	44	24	540	237	351	Netherlands	9	9	82	88	146
Canada	15	2	64	33	57	United States	24	66	492	379	1,706
United States	1,645	3,296	10,344	19,853	25,212	Syria and Lebanon	0	0	9	0	2
Ceylon	0	0	2	2	7	Algeria	2	9	93	40	57
Syria and Lebanon	0	2	0	2	2	Union of S. Africa . . . . .	...	...	22 ¹⁾	11	18
Australia	2	0	33	24	40	Australia	75	106	562	754	928
Totals	—	—	—	—	2,263,485	New Zealand . . . . .	...	...	44 ¹⁾	42	106
IMPORTS.						Totals	49,782	46,727	614,522	604,507	846,929
<i>Importing Countries:</i>						IMPORTS.					
Germany	25,854	21,621	217,101	198,712	307,398	<i>Importing Countries:</i>					
Austria	842	1,034	8,494	7,489	11,244	Germany	814	743	7,284	7,167	10,415
Belgium	7,180	5,932	65,918	74,913	109,656	Austria	51	73	602	522	728
Bulgaria	97	106	774	670	1,079	Belgium	42	40	335	353	534
Denmark	4,903	5,016	38,550	39,249	57,814	Denmark	119	84	761	896	1,230
Spain	4,427	4,808	35,217	40,627	67,149	Spain	24	29	174	212	359
Estonia	15	7	106	14	152	Estonia	7	4	49	51	66
Irish Free State	37	46	254	273	545	Irish Free State	2,015	2,242	15,853	16,995	23,464
Finland	3,025	3,075	25,161	25,064	37,038	Finland	31	22	168	176	251
France	32,853	31,024	260,867	276,838	409,056	France	220	320	1,349	2,987	3,968
Gr. Britain and N. Ireland	9,945	12,597	28,623	41,310	77,424	Gr. Britain and N. Ireland	34,000	28,896	391,873	351,965	470,574
Greece	818	915	8,104	8,481	12,641	Greece	53	37	304	311	390
Hungary	306	390	3,318	2,881	4,314	Hungary	33	37	417	313	381
Italy	7,355	6,720	57,878	57,783	86,889	Italy	31	24	194	176	280
Latvia	7	18	68	123	278	Latvia	9	7	55	37	51
Lithuania	40	26	271	243	359	Lithuania	11	4	57	55	84
Norway	2,837	2,687	20,175	22,769	37,366	Norway	26	37	223	256	381
Netherlands	3,677	10,368	41,601	101,153	137,461	Netherlands	2,052	1,349	20,596	19,513	25,942
Poland	1,334	1,351	9,581	11,579	16,852	Poland	295	287	2,341	2,584	3,719
Portugal	1,038	1,444	10,719	9,063	12,035	Portugal	44	31	265	348	478
Sweden	7,346	8,342	62,578	62,373	96,759	Sweden	95	86	602	584	884
Switzerland	2,467	3,197	18,869	21,056	32,058	Switzerland	141	146	1,027	1,071	1,576
Czechoslovakia	1,821	858	15,210	15,569	23,177	Czechoslovakia	57	79	805	668	902
Yugoslavia	1,080	1,219	8,715	10,124	13,823	Yugoslavia	31	15	342	378	388
Canada	3,411	3,527	19,650	21,555	36,110	Canada	2,055	7,125	19,015	27,062	41,246
United States	158,495	178,571	995,501	1,093,007	1,598,178	United States	6,524	4,696	57,622	66,633	87,691
Chile	24	35	3,247	2,260	4,394	Chile	68	172	2,242	1,140	2,156
Ceylon	302	49	2,092	2,019	3,150	Syria and Lebanon	55	22	412	201	271
Japan . . . . .	...	...	3,801 ¹⁾	1,601	2,368	Algeria	11	326	2,244	2,771	3,863
Syria and Lebanon	234	192	1,411	1,601	2,368	Egypt	1,138	1,742	11,343	11,151	15,166
Algeria	2,555	2,575	20,602	19,943	29,518	Tunisia . . . . .	...	...	1,466 ¹⁾	758	1,781
Egypt	1,512	1,523	10,282	13,801	17,604	Union of S. Africa . . . . .	...	...	8,120 ¹⁾	7,912	11,636
Tunisia . . . . .	...	...	1,497 ¹⁾	1,360	3,344	Australia	3,558	4,284	31,339	33,074	46,260
Un. of S. Africa . . . . .	...	...	15,227 ¹⁾	18,137	29,313	New Zealand . . . . .	...	...	4,350 ¹⁾	5,587	11,407
Australia . . . . .	...	...	1,276 ¹⁾	3,203	5,057	<i>Exporting Countries:</i>					
New Zealand . . . . .	...	...	141 ¹⁾	256	492	China	15	53	470	461	677
<i>Exporting Countries:</i>						India	254	304	2,544	3,907	4,414
India	0	0	0	0	2	Java and Madura . . . . .	...	...	1,160 ¹⁾	1,338	2,019
Totals	285,837	312,733	2,010,879	2,209,087	3,288,216	Totals	53,879	53,316	588,003	569,503	775,632

1) a) 3) See notes page 309.

COUNTRIES	FEBRUARY		FIVE MONTHS (Oct. 1-Feb. 28)		TWELVE MONTHS (Oct. 1-Sept. 30)	COUNTRIES	FEBRUARY		SEVEN MONTHS (Aug. 1-Feb. 28)		TWELVE MONTHS (August 1-July 31)
	1935	1934	1934-35	1933-34	1933-34		1935	1934	1934-35	1933-34	1933-34
Cacao. — (Thousand lb.).						Total Wheat and Flour *)					
EXPORTS.						(Thousand centals).					
<i>Exporting Countries:</i>						<i>a) NET EXPORTS.</i>					
Granada	661	1,607	2,967	4,605	9,612	Germany	s)	s)	s)	4,266	2,716
Dominican Republ.	3,986	4,458	14,350	14,751	49,818	Bulgaria	s)	55)	0	1,676	2,366
Brazil	1,543	1,806	100,286	76,443	211,552	Spain	0	9	0	35	42
Ecuador	1,543	1,193	8,170	6,905	37,278	Estonia	0	0	75	0	0
Trinidad	3,307	3,955	12,024	14,107	29,057	France	1,583	s)	4,793	s)	s)
Venezuela	1,984	2,991	7,474	7,972	25,223	Hungary	569	1,014	4,281	11,396	17,452
Ceylon	681	1,497	3,721	4,729	8,841	Latvia	2	0	60	0	0
Java and Madura . . . . .	...	1)	1,660 1)	1,552	4,195	Lithuania	49	2	157	26	29
French Cameroon	5,792	4,389	28,290	24,901	48,427	Poland	75	104	639	s)	1,466
Ivory Coast	6,521	13,336	52,239	34,401	78,681	Romania	0	2	s)	139	139
Gold Coast	87,627	68,593	333,942	298,599	494,792	Yugoslavia	2	2	1,905	256	626
Nigeria and British Cameroon	29,053	38,043	115,531	97,822	159,165	U. S. S. R. . . . .	...	2)	1,179 2)	15,781 7)	19,271
Saint Thomas and Prince Is.	2,154	1,484	16,116	12,655	19,795	Canada	5,108	4,755	68,586	72,016	115,972
French Togoland	4,872	2,703	8,545	6,515	12,932	United States	s)	1,925	s)	8,353	15,346
<i>Importing Countries:</i>						Argentina	10,503	10,315	65,114	43,006	87,308
Germany	0	29	88	170	205	Chile	s)	51	500	s)	s)
Belgium	0	0	172	0	18	India	35	31	351	150	223
France	0	0	2	0	0	Syria and Lebanon	44	s)	192	s)	s)
Gr. Brit. and N. Irel.	448	690	9,039	3,168	13,492	Algeria	606	763	4,976	4,544	7,214
Netherlands	287	712	1,717	2,765	7,368	French Morocco	179	209	2,235	3,377	5,135
United States	833	1,574	4,191	5,236	10,823	Tunisia . . . . .	...	...	911	82	0
Australia	90	0	249	0	322	Australia	5,443	5,646	37,787	30,999	50,651
Totals	151,382	148,260	720,773	617,316	1,221,596	New Zealand . . . . .	...	...	s)	15	s)
IMPORTS.						Totals	24,198	24,883	193,741	196,117	325,956
<i>Importing Countries:</i>						<i>b) NET IMPORTS.</i>					
Germany	14,934	19,015	79,693	79,468	218,563	Germany	549	284	4,742	6)	6)
Austria	959	340	5,576	3,655	10,282	Austria	265	500	2,718	2,910	6,168
Belgium	1,616	2,806	7,377	12,610	24,403	Belgium	1,737	2,079	15,148	14,756	25,093
Bulgaria	46	0	278	313	798	Denmark	1,142	315	7,683	4,694	7,516
Denmark	511	602	2,427	3,243	8,468	Irish Free State	567	761	5,472	6,389	11,735
Spain	3,243	3,688	7,661	7,665	29,762	Finland	126	196	1,307	1,451	2,626
Estonia	55	115	282	417	644	France	6)	972	6)	6,729	10,304
Irish Free State	364	957	1,056	2,094	4,449	Gr. Brit. and N. Irel.	9,312	8,984	67,030	74,316	130,547
Finland	18	7	108	66	157	Greece	441	448	3,624	4,103	6,303
France	7,632	7,899	35,592	42,089	94,376	Italy	448	946	2,264	2,405	5,194
Gr. Brit. and N. Irel.	25,422	42,816	96,283	102,950	176,467	Norway	421	110	3,106	2,663	4,996
Greece	309	216	1,279	1,581	2,868	Netherlands	1,063	326	7,443	8,684	13,510
Hungary	571	789	3,602	2,676	6,477	Poland	6)	6)	6)	112	6)
Italy	1,448	1,323	10,227	8,576	18,470	Portugal	33	46	185	298	575
Latvia	152	159	644	787	1,583	Romania	6)	6)	2	6)	6)
Lithuania	77	53	302	207	545	Sweden	64	82	430	694	721
Norway	977	527	3,208	1,788	5,564	Switzerland	7)	545 7)	578 7)	6,001 7)	6,444 7)
Netherlands	11,947	15,384	56,439	56,483	124,522	Czechoslovakia	236	0	417	97	104
Poland	955	983	6,440	6,025	14,253	Total Europe	16,949	16,627	127,572	136,745	235,963
Portugal	137	106	492	518	1,107	United States	514	6)	1,825	6)	6)
S Sweden	2,028	904	5,600	4,383	9,749	Chile	2	6)	6)	721	227
Switzerland	1,259	2,520	4,065	5,897	16,455	Ceylon	53	42	335	313	518
Czechoslovakia	1,883	2,306	9,363	10,040	23,488	China	860	1,418	4,050	6,625	12,547
Yugoslavia	130	370	732	811	1,537	Indo-China . . . . .	...	...	258 1)	1,218	450
Canada	1,810	1,025	10,097	11,270	22,377	Japan . . . . .	...	...	785 1)	761	1,420
United States	104,623	37,900	257,344	152,086	412,610	Java and Madura	6)	84	6)	229	858
Japan . . . . .	...	1)	1,124 1)	1,109	2,337	Syria and Lebanon	205	9	631	77	130
Australia	5,924	1,499	7,961	5,919	16,239	Egypt . . . . .	...	...	6)	6)	33
New Zealand . . . . .	...	...	198 2)	207	2,487	Tunisia . . . . .	...	...	1)	525 1)	22
Totals	189,030	144,309	615,450	524,933	1,251,039	Union of S. Africa . . . . .	...	...	2)	126	6)
EXPORTS.						New Zealand . . . . .	...	...	2)	126	6)

*) Flour reduced to grain on the basis of the coefficient: 1000 centals of flour = 1,333,333 centals of grain.

a) Excess of exports over imports. — b) Excess of imports over exports.

1) Data up to 31 January. — 2) Data up to 31 December. — 3) Data up to 30 November. — 4) Data up to 31 October.

— 5) See Net Imports. — 6) See Net Exports. — 7) Wheat only.

STOCKS OF CEREALS

Total stocks of homegrown cereals and linseed in Canada on 31 March.

PRODUCTS	1935	1934	1933	1932	1931
	1,000 centals				
Wheat	169,605	182,564	188,688	147,691	168,057
Rye	2,577	2,530	3,909	6,782	11,627
Barley	10,926	11,628	14,301	13,800	40,606
Oats	38,483	36,557	54,226	45,646	71,475
Linseed	325	372	1,019	982	1,566

Stocks of cereals, linseed and potatoes in farmers' hands in Canada on 31 March.

PRODUCTS	% Stocks: total production					Stoks in 1,000 centals				
	1935	1934	1933	1932	1931	1935	1934	1933	1932	1931
Wheat	22	26	19	19	22	36,276	43,287	49,576	37,104	56,353
Rye	14	13	24	18	33	418	318	1,148	538	4,093
Barley	20	21	28	28	42	6,243	6,410	10,860	8,955	27,380
Oats 1)	30	29	37	35	45	33,173	30,351	49,479	39,583	65,315
Linseed	18	13	13	13	12	93	46	199	181	343
Potatoes	41	30	30	42	38	19,740	12,272	11,880	21,935	18,280

1) For oats the bushel is of 32 lb

Total stocks of wheat in different locations in Canada on 31 March.

LOCATION 1)	1935	1934	1933	1932	1931
	1,000 centals				
On farms	36,276	43,287	49,576	37,104	56,353
In country and interior (terminal elevators, western division	59,323	63,163	66,730	50,339	48,635
In terminal elevators Lake Superior 2)	38,292	43,253	41,978	33,357	30,850
In elevators Pacific Coast 3)	7,365	7,232	6,542	8,431	8,735
In elevators Hudson Bay 4)	1,433	1,486	1,458	—	—
In eastern elevators	18,602	12,377	11,652	7,483	9,481
In flour mills	5,254	7,732	4,995	5,951	9,634
In transit	3,060	4,034	5,846	5,027	4,369
<i>Total Canadian wheat as grain</i>	<i>169,605</i>	<i>182,564</i>	<i>188,687</i>	<i>147,692</i>	<i>168,057</i>
U. S. grain in store in Canada	629	1,337	3,842	15,347	3,152
TOTAL WHEAT AS GRAIN IN CANADA	170,234	183,901	192,529	163,039	171,209

1) Quantities afloat for unloading at Canadian ports are included in stocks in terminal elevators Lake Superior or in eastern elevators. — 2) Fort William and Port Arthur. — 3) Vancouver, New Westminster, Victoria, Prince Rupert. — 4) Churchill.

Stocks of cereals in farmers' hands in the United States.

PRODUCTS	% Stocks : total production					Stocks in 1,000 centals				
	1 April	1 Jan.,	1 Oct.,	1 April	1 April	1 April	1 Jan.,	1 Oct.,	1 April	1 April
	1935	1935	1934	1934	1933	1935	1935	1934	1934	1933
Wheat	18.9	27.4	47.1	22.0	24.6	56,219	81,626	140,570	69,779	109,911
Oats	39.4	65.5	84.4	37.7	37.5	66,619	110,803	147,504	88,136	149,752
Maize 1)	39.6	73.5	2) 13.1	41.3	44.9	245,381	455,850	2) 148,329	471,239	631,748

1) Data based on maize for grain. — 2) Stocks of old harvest.

Commercial cereals in store in Canada and the United States.

SPECIFICATION	Friday or Saturday nearest 1st of month				
	April 1935	March 1935	February 1935	April 1934	April 1933
	1,000 centals				
WHEAT :					
Canadian in Canada	129,190	131,532	133,279	130,996	135,317
U.S. in Canada	629	629	629	1,337	3,842
U.S. in the United States	31,129	37,051	45,164	58,279	81,331
Canad. in the United States	9,793	12,891	14,978	3,392	3,595
Of other origin in the United States	209	10	13	0	0
Total	170,950	182,113	194,063	194,004	224,085
RYE :					
Canadian in Canada	2,144	2,174	2,202	2,207	2,873
U.S. in Canada	0	0	0	0	55
U.S. in the United States	5,405	5,953	6,432	6,508	4,305
Canad. in the United States	0	0	0	45	304
Of other origin in the United States	618	498	299	1,790	0
Total	8,167	8,625	8,933	10,550	7,537
BARLEY :					
Canadian in Canada	4,633	4,859	5,074	5,060	3,265
U.S. in Canada	0	0	0	0	10
U.S. in the United States	5,643	6,842	7,875	6,977	4,727
Canad. in the United States	556	557	595	0	0
Of other origin in the United States	135	20	20	0	0
Total	10,967	12,278	13,564	12,037	8,002
OATS :					
Canadian in Canada	4,904	5,229	5,292	5,713	4,122
U.S. in Canada	19	26	32	28	54
U.S. in the United States	5,010	6,313	7,146	12,221	7,742
Canad. in the United States	0	0	0	0	0
Of other origin in the United States	678	1,056	750	0	0
Total	10,611	12,624	13,220	17,962	11,928
MAIZE :					
U.S. in Canada	2,962	3,062	3,179	3,830	875
Of other origin in Canada	1,379	1,407	1,436	679	916
U.S. in the United States	11,957	15,681	19,318	37,136	20,245
Of other origin in the United States	430	169	6	0	0
Total	16,728	20,319	23,939	41,645	22,036

Quantities of cereals on Ocean passage with first destination for Europe.

PRODUCTS	Saturday nearest 1st of month				
	April 1935	March 1935	February 1935	April 1934	April 1933
	1,000 centals				
Wheat (and flour in terms of grain)	17,467	20,232	20,078	21,941	31,435
Rye	1,334	1,128	350	163	614
Barley	1,980	2,336	2,732	3,628	2,272
Oats	650	1,939	1,757	1,117	1,843
Maize	6,298	9,466	12,888	6,091	7,978

AUTHORITY: *Broomhall's Corn Trade News.*

Stocks belonging to farmers in Germany.

PRODUCTS	% stocks: total production					Stocks in 1,000 centals				
	31 March 1935	28 Feb. 1935	31 Jan. 1935	31 March 1934	31 March 1933 1)	31 March 1935	28 Feb. 1935	31 Jan. 1935	31 March 1934	31 March 1933
Winter wheat	14	20	28	17	24	12,200	17,400	24,400	18,500	23,000
Spring wheat	24	38	48	29	33	3,100	4,900	6,200	4,300	4,700
Winter rye	19	26	34	23	24	31,500	43,120	56,400	43,800	43,800
Winter barley	9	12	17	15	11	1,400	1,800	2,600	2,400	1,500
Spring barley	20	29	37	24	17	11,100	16,100	20,500	14,600	9,700
Oats	34	46	55	37	39	40,900	55,300	66,100	56,700	57,200
Late potatoes	33	40	49	28	29	303,900	368,300	451,200	252,900	280,300

1) Average between data on 15 March and 15 April.

AUTHORITY: *Marktberichtsstelle beim Reichsnährstand* (The absolute figures are calculated by the I. I. A.).

Stocks of cereals in commercial elevators and mills in Germany.

PRODUCTS	Last day of month				
	March 1935	February 1935	January 1935	March 1934	March 1933
	1,000 centals				
WHEAT:					
Grain	39,095	40,550	40,448	29,551	15,245
Flour for bread	3,512	3,605	3,691	3,199	3,089
TOTAL 1)	43,974	45,557	45,574	33,993	19,535
RYE:					
Grain	32,580	33,206	31,537	20,847	13,761
Flour for bread	1,993	2,112	2,410	2,013	1,605
TOTAL 1)	35,570	36,312	35,080	23,808	16,122
BARLEY	2,414	3,269	4,112	3,754	2,447
OATS	2,480	2,467	2,405	1,843	2,266

1) Including flour in terms of grain, on the basis of the coefficient: 1,000 centals of wheat flour = 1,388.89 centals of wheat; 1,000 centals of rye flour = 1,470.59 centals of rye.

Stocks in farmers' hands in England and Wales.

PRODUCTS	% Stock: total production				Stock in 1,000 centals			
	1 April 1935	1 January 1935	1 April 1934	1 April 1933	1 April 1935	1 January 1935	1 April 1934	1 April 1933
Wheat	40	14	13	...	15,568	4,838	3,248
Barley	35	9	14	...	5,712	1,527	2,397
Oats	52	19	19	...	13,238	5,197	5,354
Potatoes	52	19	18	...	39,850	15,142	13,597
Hay	66	19	28	...	84,202	24,125	42,650
Straw	64	25	26	...	56,851	21,728	22,019

Grain and flour stocks at the ports of Great Britain and Ireland 1).

PRODUCTS	First day of month				
	April 1935	March 1935	February 1935	April 1934	April 1933
	1,000 centals				
WHEAT:					
Grain	6,528	6,720	7,704	8,280	5,400
Flour as grain	720	768	768	600	624
TOTAL	7,248	7,488	8,472	8,880	6,024
BARLEY	960	900	980	1,520	820
OATS	352	238	256	816	448
MAIZE	3,072	4,368	4,464	3,600	2,232

1) Imported cereals.

AUTHORITY: *Broomhall's Corn Trade News*.

Stocks of wheat in Italy.

LOCATION	Last day of month				
	January 1935	December 1934	November 1934	October 1934	September 1934
	1,000 centals				
Wheat destined for sale by holding pools ("ammassi collettivi");					
in collective granaries	6,592	7,812	8,010	8,018	7,681
in granaries of producers or other persons	990	1,301	1,322	1,396	1,240
Total	7,582	9,113	9,332	9,414	8,921
Wheat in general stores and in free zones 2)	6,276	7,578	8,031	8,120	8,979
Wheat in bond in the chief entrepot centres	710	1,110	697	572	593
Wheat in mills and attached elevators 3) .	8,900	9,616	11,773	12,580	12,690
GRAND TOTAL	23,468	27,417	29,833	30,686	31,183

1) Including a small quantity of wheat belonging to holding pools which is stored in general stores. — 2) Not including quantities belonging to holding pools; see previous note. — 3) Provisional figures referring to mills which have a daily capacity of not less than 40 metric quintals.

Commercial stocks of cereals in Antwerp, Rotterdam and Amsterdam 1).

PRODUCTS AND LOCATION	Saturday nearest 1st of month 2)				
	April 1935	March 1935	February 1935	April 1934	April 1933
	1,000 centals				
WHEAT:					
Antwerp	1,903	2,050	1,997	1,965	1,320
Rotterdam	592	915	1,519	1,082	823
Amsterdam	16	14	11	46	14
RYE:					
Antwerp	105	200	119	94	33
Rotterdam	132	99	132	198	220
Amsterdam	4	5	1	21	5
BARLEY:					
Antwerp	312	196	112	237	137
Rotterdam	276	160	88	132	77
Amsterdam	4	6	0	29	28
OATS:					
Antwerp	66	45	57	95	38
Rotterdam	13	14	30	190	121
Amsterdam	31	36	22	29	39
MAIZE:					
Antwerp	185	260	71	76	93
Rotterdam	132	220	76	99	309
Amsterdam	29	30	39	40	75

1) Imported cereals. See note on p. 306 of the *Crop Report* of April 1934. — 2) For Antwerp the data refers to the last day of the preceding month, for Amsterdam to the first day of the month indicated.

AUTHORITIES: *Nederlandsche Silo-, Elevator- en Graanfactor Mij*, Amsterdam, and *Chamber of Commerce and Industry for Rotterdam, Rotterdam*.

STOCKS OF COTTON

Stocks of cotton on hand in the United States.

LOCATION	Last day of month				
	March 1935	February 1935	January 1935	March 1934	March 1933
	1,000 centals				
In consuming establishments	5,501	5,718	5,881	8,129	6,568
In public storage and at compresses . . .	38,383	41,282	44,196	38,713	43,590
TOTAL . . .	43,884	47,000	50,077	46,842	50,158

Stocks of cotton at Bombay and at Alexandria.

PORTS	Thursday nearest 1st of month				
	April 1935	March 1935	February 1935	April 1934	April 1933
	1,000 centals				
Bombay 1)	3,272	2,876	2,452	4,292	3,152
Alexandria 2)	2,310	2,384	2,406	2,982	3,680

1) Stocks held by exporters, dealers and mills. — 2) From February 1934 quantities consumed in Alexandria as well as those returned to the interior of the country are not included; prior to this date quantities returned to the interior are included.

AUTHORITIES: *East Indian Cotton Ass.* and *Commission de la Bourse de Minet-el-Bassal*.

Stocks of cotton in Europe.

LOCATION, DESCRIPTION	Thursday or Friday nearest 1st of month				
	April 1935	March 1935	February 1935	April 1934	April 1933
	1,000 centals				
<i>Great Britain:</i>					
American	1,418	1,549	1,486	2,521	2,451
Argentine, Brazilian, etc.	656	763	843	428	133
Peruvian, etc.	468	515	563	347	261
East Indian, etc.	205	122	168	207	84
Egyptian, Sudanese	1,173	1,257	1,220	1,660	1,038
W. Indian, W. and E. African, Australian	170	165	199	185	288
TOTAL	4,099	4,371	4,479	5,348	4,255
<i>Bremen:</i>					
American	990	1,064	1,210	2,820	2,601
Other	196	187	262	139	81
TOTAL	1,186	1,251	1,472	2,959	2,682
<i>Le Havre:</i>					
American	629	715	698	1,374	1,255
French colonies	15	28	22	40	11
Other	95	98	102	48	22
TOTAL	739	841	822	1,462	1,288
<i>Total Continent 1):</i>					
American	1,982	2,171	2,381	4,969	4,769
Argentine, Brazilian, etc.	134	122	185	38	16
E Indian, Australian, etc.	148	174	179	201	82
Egyptian	262	282	266	133	117
W. Indian, W. African, E. African, etc.	99	128	155	115	106
TOTAL	2,625	2,877	3,164	5,456	5,090

1) Includes Bremen, Le Havre, and other Continental ports.

AUTHORITIES: Liverpool Cotton Ass. and (for Le Havre) Bulletin de correspondance de la Bourse du Havre.

EXCHANGE RATES

RELATION OF VARIOUS CURRENCIES TO THEIR PARITY WITH THE SWISS FRANC (1)

NATIONAL CURRENCIES	Exchange rates				Percentage bonus (+) or loss (-)			
	12 April 1935	5 April 1935	29 March 1935	22 March 1935	12 April 1935	5 April 1935	29 March 1935	22 March 1935
Germany: free reichsmark.	124.375	124.050	123.950	124.050	+ 0.7	+ 0.5	+ 0.4	+ 0.5
Argentina: paper peso †)	93.594	93.844	93.219	91.781	- 57.5	- 57.3	- 57.6	- 58.3
Belgium: belga.	52.375	52.375	58.500	72.000	+ 0.9	+ 0.9	- 18.8	- 0.1
Canada: dollar	3.080	3.065	3.060	3.050	- 40.6	- 40.9	- 41.0	- 41.2
Denmark: crown	66.900	66.875	66.500	66.000	- 51.8	- 51.9	- 52.1	- 52.5
Spain: peseta	42.250	42.225	42.225	42.200	- 57.8	- 57.8	- 57.8	- 57.8
Egypt: pound 2)	14.975	15.015	14.915	14.685	- 40.6	- 40.5	- 40.9	- 41.8
United Kingdom: pound sterling	3.087	3.089	3.090	3.086	+ 0.8	+ 0.9	+ 0.9	+ 0.8
United States: dollar	20.380	20.377	20.377	20.380	+ 0.4	+ 0.4	+ 0.4	+ 0.4
France: franc	55.500	55.000	56.625	57.875	- 38.8	- 39.3	- 37.5	- 36.2
Indo-China: piastre 3)	113.311	113.363	112.608	110.872	- 40.1	- 40.1	- 40.5	- 41.4
Hungary: pengő 4)	25.625	25.675	25.650	25.650	- 6.1	- 5.9	- 6.0	- 6.0
India: rupee †)	87.916	88.151	87.563	86.213	- 66.0	- 65.9	- 66.1	- 66.6
Italy: lira	208.375	207.850	208.800	209.050	0.0	0.2	0.2	0.4
Japan: yen †)	58.300	58.300	58.300	58.300	+ 0.3	+ 0.3	+ 0.3	+ 0.3
Netherlands: florin	3.100	3.100	3.100	3.100	0.0	0.0	0.0	0.0
Poland: zloty	77.375	77.625	76.750	76.000	- 44.3	- 44.1	- 44.7	- 45.3
Rumania: leu	12.915	12.915	12.915	12.900	+ 0.9	+ 0.9	+ 0.9	+ 0.3
Sweden: crown								
Czechoslovakia: crown								

1) The exchange rate represents the value of 100 units of the national currency (for the dollar and the pound sterling 1 unit) expressed in Swiss francs, as far as possible on the Zurich Exchange. With regard to the currencies marked thus (†) a conversion has been made; the original exchange rates on London being converted into Swiss francs by means of the rate of the £ in Zurich. — 2) As the relation between the Egyptian pound and the pound sterling remains unchanged, the exchange rate of the latter only is given. — 3) As the relation between the Indo-Chinese piastre and the French franc changes only slightly, the exchange rate of the latter only is given. — 4) Bank notes.

WEEKLY PRICES BY PRODUCTS

(All quotations are, unless otherwise stated, for spots. The monthly averages are based on weekly quotations, the annual averages on the monthly)

DESCRIPTION	12	5	29	22	AVERAGE			Commercial		
	April	April	March	March	March	April	April	Season 1)		
	1933	1933	1935	1933	1935	1934	1933	1933-34	1932-33	
Wheat.										
Budapest: Tisza wheat, 75 kg. p. hl. (pengő p. quintal)	16.35	16.80	17.25	17.47	17.57	10.05	14.63	9.70	13.73	
Braila: Good quality (lei p. quintal)	425	400	440	425	* 431	n. q.	n. q.	* 375	* 535	
Winnipeg: No. 1 Manitoba (cents p. 60 lb.)	89 1/4	85 7/8	83 3/4	83	82 1/8	65 1/8	53 3/8	67 1/8	54 1/4	
Chicago: No. 2 Hard Winter (cents p. 60 lb.)	n. 108 1/2	n. 103 1/2	n. 102 1/2	103	n. 103	82 1/8	63 7/8	89 1/4	59 1/4	
Minneapolis: No. 1 Northern (cents p. 60 lb.)	115 1/2	109 7/8	110 1/4	108 7/8	109	82 3/4	64	89 3/8	60 3/8	
New-York: No. 2 Hard Winter (cents p. 60 lb.)	119	113 3/4	112 3/4	113 3/8	114 3/4	93 3/8	72 7/8	98 3/4	68 3/8	
Buenos Aires (a): Barletta, 80 kg. p. hectol. (paper pesos p. quintal)	7.50	7.70	7.00	6.70	6.66	5.75	5.69	5.85	6.09	
Karachi: Karachi white, 2% barley & 1 1/2 % dirt (rupees p. 65 lb.)	n. q.	22-11-0	22-0-0	22-3-0	21-15-0	20-2-0	26-12-6	22-2-4	28-4-2	
Berlin: Home grown (free at Branden- burg stations; Rm. p. quintal) 2)	20.70	20.70	20.60	20.60	20.60	19.10	19.62	18.65	19.60	
Hamburg (c. i. f.; Rm. p. quintal):										
No. 2 Manitoba 3)	9.51	9.32	8.33	8.88	8.65	7.25	8.76	7.94	8.83	
Barusso 4)	6.87	7.01	6.44	6.18	6.04	5.56	7.03	6.22	7.76	
Antwerp (francs p. quintal):										
Home-grown	79.50	80.50	61.00	60.00	60.20	59.75	81.25	63.00	79.70	
No. 1 Manitoba (Atlantic) (in bond)	108.00	106.00	76.00	74.50	74.00	61.75	74.85	67.65	74.35	
Barusso (in bond)	82.00	81.00	48.50	47.00	47.30	46.50	58.62	53.00	66.20	
Paris: Home-grown (delivery regional depots; frs. p. quintal) 5):										
76 kg. p. hl., crop of 1934	77.00	75.00	76.00	76.00	77.80	129.00	99.00	125.65	107.35	
76 kg. p. hl., crop of 1933			133.50	133.50	133.50					
London: Home grown (sh. p. 504 lb.) 6)	21/6	21/6	20/9	20/6	20/6 1/2	19/6 3/4	22/10 1/2	20/10	24/8 1/2	
Liverpool and London (c. i. f., parcels, ship- ping current month; sh. p. 480 lb.)										
French (on sample)	20/3	20/-	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	
No. 1 Northern Manitoba (Atlantic)	n. 34 1/2	n. 33 3/4	n. 32 7/8	n. 32/9	32 3/8	25/6	25/10 1/2	26/9	26/8 1/2	
No. 1 Northern Manitoba (Pacific)	33 7/8	32/10 1/2	32/-	32/-	31/10	25/-	25/6	26/7	26/4	
No. 3 Northern Manitoba (Pacific)	31/-	30/3 3/4	29/3	29/-	28/7 1/2	22/7	24/4	24 5/8	25 1/2	
White Pacific	n. q.	n. q.	n. q.	n. q.	n. q.	18/9 3/4	n. q.	* 20/5	n. q.	
Rosafé (above) 7)	24 1/2	23 7 1/2	22 1/4	21 10 1/2	21/2	17 5 1/2	20 4 1/2	19 5 1/2	23/2	
Australian	28/3	28/-	27/-	26/3	25/5	21/11	23 5 1/2	23/4	25/7	
Milan (b): Home-grown, soft, « Buono mer- cantile » 76-78 kg. p. hl. (lire p. quint.)	108.00	105.00	101.00	101.00	100.00	89.25	100.20	84.10	101.80	
Genoa: Sicilian Durum (c. i. f.; lire p. quint.)	123.75	122.50	121.50	121.50	121.00	110.75	122.85	107.85	* 119.75	
Genoa (c. i. f.; U. S. \$ p. quintal):										
No. 2 Manitoba (Pacific)	n. q.	n. q.	n. q.	n. q.	n. q.	2.66	* 2.06	2.93	2.23	
No. 2 Canadian Durum 8)	4.33	4.34	4.19	n. q.	n. q.	3.10	2.29	3.11	2.59	
Plate, 80 kg. p. hl. 9)	115/6	116/-	109/-	n. q.	n. q.	87/1	* 1.59	* 92/10	* 1.83	
Rye.										
Berlin: Home-grown (free at Branden- burg stations; Rm. p. quintal) 2)	16.70	16.70	16.60	16.60	16.60	15.90	15.57	15.34	15.52	
Hamburg (c. i. f.; Rm. p. quintal): Plata,										
72-73 kg p. hl.	5.15	5.75	5.30	5.39	5.34	4.24	5.84	4.76	* 5.98	
Budapest: Pest rye (pengő p. quintal)	11.35	11.70	12.10	12.47	12.71	4.70	6.92	5.24	6.77	
Warsaw: Good quality (zloty p. quint.)	13.87	13.37	12.87	13.75	14.17	14.50	20.25	14.32	18.06	
Winnipeg: No. 2 (cents p. 56 lb.)	53 1/2	49 3/8	n. q.	48 1/4	* 49 1/4	44 1/8	37 1/4	47 3/4	37 3/4	
Minneapolis: No. 2 (cents p. 56 lb.)	63 3/8	59 1/8	58 1/4	59 7/8	62 1/2	56 1/4	43 1/4	63	41 1/4	
Groningen (c): Home-grown (fl. p. quint.)	7.25	7.30	7.35	7.30	7.29	7.31	3.97	6.65	3.92	

* Indicates that the product during part of the period under review was not quoted. — n. q. = not quoted. — n. = nominal. — a) Thursday prices. — b) Saturday prices. — c) Prices of preceding Tuesday.

1) August-July. — 2) 1 Oct. 1933-15 Aug. 1934 for wheat and 1 Oct. 1933-15 July 1934 for rye: minimum prices; subsequently, fixed producers prices for the price region of Berlin city. See also *Bull. of Agric. Economics and Sociology*, Aug. 1934, p. 342. — 3) From Nov. 1934, No. 1 Manitoba. — 4) Aug.-Dec. 1932: 80 kg. p. hl.; year 1933: 79 kg.; subsequently: 80 kg. — 5) 16 July 1933-25 December 1934: minimum prices on the farm increased by transport costs from farm to Paris stations. From 1 August 1934 a considerable percentage of old crop wheat has to be used in the flour for breadmaking. — 6) From Aug. 1933: prices on the farm. — 7) August-Dec. 1932: 64 lb. p. bushel; Jan.-Oct. 1933: 63 1/2 lb.; Nov.-Dec. 1933: 63 lb.; year 1934: 64 lb.; subsequently: 63 1/2 lb. — 8) From Dec. 1934: No. 1. Can. Dur. — 9) From Feb. 1934: prices in sh. 2000 kg. — 10) 15 March: 22-12-0; 8 March: 41-10-0; 1 March: 22-2-0; 22 Feb.: 22-14-0; average Feb.: 23-9-6.

DESCRIPTION	12	5	29	22	AVERAGE				Commercial Season 1)	
	April	April	March	March	March	April	April			
	1935	1935	1935	1935	1935	1934	1933		1933-34	1932-33
Barley.										
Warsaw: Malting, good quality (zloty p. quintal)	17.75	18.25	18.25	19.00	19.35	15.75	16.50		* 15.87	* 17.11
Braila: Average quality (lei p. quintal).	240	235	235	232	* 249	137	161		* 154	* 186
Prague: Malting, av. qual. (crs. p. quintal) 2)	135.50	135.50	135.50	135.50	135.50	89.00	77.00		* 94.20	* 83.30
Winnipeg: No. 4 Western (cents p. 48 lb.)	42 1/2	40 3/4	44 1/4	39 3/4	41 1/2	35 3/4	29 3/4		36 1/4	29 3/4
Chicago: Feeding (on sample; cents p. 48 lb.)	75	73 1/2	72	73	70 3/4	53	38 1/2		54	33 1/4
Minneapolis: No. 2 Feeding (c. p. 48 lb.)	69	66	63	61	66 3/4	37 1/2	28 1/2		45 1/2	27 1/4
Berlin: Home-grown fodder (free at Brandenburg stations; Rm. p. quint.) 3) 4)	16.60	16.60	16.50	16.50	16.50	15.47	16.74		* 16.17	* 16.58
Antwerp: Danubian (in bond; francs p. q.)	74.00	75.00	58.50	58.00	52.40	50.10	51.00		49.35	55.50
London: English malting, best quality (sh. p. 448 lb.) 5)	37/6	37/6	37/6	37/6	37/6	34/4 1/2	30/-		* 39/5 1/2	* 35/-
Liverpool and London (c.i.f., parcels; shipping current month; sh. p. 400 lb.):										
Danubian, 3 % dirt.	n. q.	n. q.	n. q.	n. q.	n. q.	13/1 1/2	14/6		* 13/9 1/2	* 16/7
No. 3 Canadian Western	21/4 1/2	21/3	21/4 1/2	21/-	22/1	16/9	16/5 1/2		17/9 1/2	* 18/1 1/2
California malting (sh. p. 448 lb.)	n. q.	n. q.	n. q.	n. q.	n. q.	18/6	22/6		22/7 1/2	22/8
Plate (64-65 kg. p. hl)	17/-	16/10 1/2	16/7 1/2	16/7 1/2	16/6 1/2	13/1 3/4	14/6 1/2		14/2 1/2	* 15/9 1/2
Persian	16/6	16/-	15/7 1/2	15/6	15/11	13/2	14/4 1/2		* 14/0 1/2	* 16/4
Groningen a): Home grown, winter (fl.p.q.)	5.17	5.17	5.15	5.07	5.47	4.40	4.00		4.44	4.40
Oats.										
Braila: Good quality (lei p. quintal)	n. q.	n. q.	n. q.	n. q.	n. q.	* 187	n. q.		* 148	* 195
Winnipeg: No. 2 White (cents per 34 lb.)	42 1/2	41 3/4	41 3/4	40 3/4	40 3/4	32 1/2	24 3/4		33 3/4	26 1/4
Chicago: No. 2 White (cents per 32 lb.)	52	51 1/4	50 1/4	49 1/2	45 1/2	31 1/2	23 1/2		37 1/4	21 3/4
Buenos Aires b): Current quality (paper pesos p. quintal)	5.55	5.65	5.45	5.45	5.47	3.26	4.00		3.65	4.43
Berlin: Home grown (free at Brandenburg stations; Rm. p. quint.) 3)	16.80	16.80	16.70	16.70	16.70	14.55	12.60		14.92	13.05
Paris: Home grown, black and other (delivery regional depots; frs. p. quintal).	43.75	44.40	41.10	40.75	42.25	42.10	69.35		48.00	76.30
London: Home grown white (sh. p. 336 lb.) 5)	21/-	21/-	20/6	20/6	20/6	18/10 1/2	18/-		18/1 1/2	18/6
Liverpool and London (c.i.f., parcels; shipping current month; sh. p. 320 lb.):										
Canadian, No. 2 Western (Pacific) 6)	20/7 1/2	20/4 1/2	19/10 1/2	19/7 1/2	19/11 1/2	15/8 3/4	14/7		* 17/4	* 16/9
Plate (f. a. q.)	13/3	13/3	13/-	12/9	12/10 3/4	8/6 1/2	11/4		10/2	12/9
Milan (c) (lire p. quintal):										
Home grown	n. 67.50	67.50	67.50	67.50	65.20	52.00	60.10		50.70	62.80
Foreign	64.00	64.00	64.00	64.00	63.30	52.75	51.20		50.05	57.10
Maize.										
Braila: Average quality (lei p. quintal)	215	205	190	200	204	168	151		* 173	* 175
Chicago: No. 3 Yellow (cents p. 56 lb.)	90	86 3/4	82 1/2	80 1/2	83 1/4	* 46 3/4	34 1/8		46 3/4	28 1/8
Buenos Aires (b): Yellow Plata (paper pesos p. quintal)	4.97	5.00	4.95	5.00	5.00	4.59	3.93		4.26	4.44
Antwerp (in bond; francs p. quintal):										
Bessarabian	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	48.60		n. q.	n. q.
Yellow Plata	69.50	68.00	49.50	49.00	48.60	53.00	55.00		48.35	54.90
Cinquantino (Argentine "Cuarentino")	70.00	70.50	51.00	51.50	51.20	54.60	70.50		58.00	67.30
Liverpool and London (c.i.f., parcels; shipping current month; sh. p. 480 lb.):										
Danubian	n. q.	n. q.	n. 20/-	20/6	20/7	16/2 1/4	16/-		16/9 3/4	* 18/3 1/4
Yellow Plata	17/-	17/-	18/6	19/6	18/10 1/4	16/2 1/2	16/5		16/7	18/0 1/4
No. 2 White flat African	18/-	n. q.	18/-	18/9	18/11 1/2	n. q.	n. q.		n. q.	19/3
Milan (c): « Alto Milanese » (lire p. quint.)	69.00	69.00	69.00	68.00	67.20	56.25	46.50		50.80	58.40

* Indicates that the product, during part of the period under review, was not quoted. — n. q. = not quoted. — n. = nominal. — a) Prices of preceding Tuesday. — b) Thursday prices. — c) Saturday prices.

1) Barley and oats: August-July; maize: May-April. — 2) From August 1934: monopoly price, paid to producers, for delivery Prague. See also *Bull. of Agric. Econ. and Soc.*, Nov. 1934, p. 512 — 3) From 16 July 1934 for fodder barley and from 1 August 1934 for oats: fixed producers' prices for the price region of Berlin city. See also *Bull. of Agric. Econ. and Soc.*, Aug. 1934, p. 342. — 4) July-August 1933: two rowed winter barley; Sept. 1933-June 1934: spring barley, average quality. — 5) From Aug. 1933: prices on the farm. — 6) June-Dec. 1934: Atlantic. — 7) Shipping May. — 8) Shipping May-June. — 9) New crop.

DESCRIPTION	12	5	29	22	AVERAGE				Commercial	
	April	April	March	March	March	April	April	April	Season 1)	
	1935	1935	1935	1935	1935	1934	1933	1933	1934	1933
Rice (milled)										
Valencia (a): No. 3 Belloch (pesetas p. quintal)	57.50	57.50	56.50	56.50	56.50	45.35	41.00	46.95	43.10	
Milan (b) (lire p. quintal):										
Vialone, oiled	162.50	158.00	151.00	150.00	149.00	197.50	188.60	177.10	198.20	
Maratelli, oiled	132.50	130.50	127.50	127.00	126.90	152.00	136.20	138.05	139.90	
Originario, white	120.00	117.50	114.50	109.00	108.70	105.75	96.50	102.80	95.50	
Rangoon: No. 3 Burma (rupees p. 7500 lb.)	252 1/2	242 1/2	237 1/2	232 1/2	233 1/2	160 3/4	187 1/4	201 1/4	194 1/4	
Saigon (Indo-chinese piastres p. quintal):										
No. 1 Round white, 25 % broken . . .	...	...	3.81	3.66	3.78	2.87	4.00	3.25	4.08	
No. 2 Japan, 40 % broken . . . . .	...	...	3.64	3.49	3.67	2.73	3.85	3.09	3.90	
Marseilles (a): No. 1 Saigon (c. i. f., frs. p. quintal)	49.00	47.00	45.00	41.00	44.00	42.75	46.50	45.95	53.10	
London (a) (c. i. f., shillings p. cwt.):										
No. 3 Spanish Belloch, oiled	n. 13/6	13/6	13/6	13/6	13/6	10/11 1/2	12/3	10/9	12/5 1/4	
No. 6 Italian good, oiled	n. 15/-	15/-	n. q.	13/9	13/9	11/7 1/2	8/9	11/10 1/4	11/2 1/4	
American Blue Rose, extra fancy . . .	14/3	14/3	14/4 1/2	14/4 1/2	14/4 1/2	17/0 1/2	15/11	17/3 1/2	16/9 1/4	
No. 2 Rangoon or Bassein (Burma) . .	7/8 1/4	7/4 1/2	7/3 1/4	7/3	7/4	5/7 1/2	6/3	6/7 1/4	6/6 1/4	
No. 1 Saigon	n. 7/9	7/4 1/2	7/1 1/2	7/0	7/1 1/4	5/6 1/4	6/4	6/3 1/4	6/9 1/4	
Siam Super, white	n. 10/-	9/3	9/3	9/1 1/2	9/2 1/4	6/9 1/4	8/2	7/5	8/1 1/2	
Tokyo: Chama (brown Japanese, average quality, yen p. koku)	29.10	29.70	29.40	29.50	29.72	23.47	21.40	26.09	21.62	
Linseed.										
Buenos Aires (a): Current quality (paper pesos p. quintal)	11.95	12.10	11.85	11.85	11.84	12.29	9.20	12.74	10.56	
Antwerp: Plate (in bond; frs. p. quint.)	132.00	130.00	94.00	93.00	93.60	102.10	98.00	107.60	111.70	
London (c. i. f., £ p. long ton):										
Plate (delivery Hull)	9-10-0	9-8-9	9-5-0	9-5-0	9-4-6	9-13-1	8-6-10	10-9-8	9-11-11	
Bombay bold	12-5-0	12-2-6	11-11-3	11-11-3	11-11-6	11-10-7	9-18-7	11-17-0	11-5-4	
Duluth: No. 1 Northern (quotations of terminal market; cents p. 56 lb.) . . .	177	179	174 1/4	172 1/2	175 1/8	178	122 1/4	186 1/8	156 1/4	
Cottonseed.										
Alexandria (piastres p. ardeb):										
Upper Egypt	63.2	61.6	61.3	66/9	66.7	37.7	68.8	41.8	67.3	
Sakellaris	57.4	56.5	56.4	61.1	61.8	34.3	65.0	37.5	63.6	
London: Sakellaris (c. i. f., delivery Hull; £ p. long ton)	n. 5-18-9	n. 5-16-3	n. 5-16-3	n. 6-6-3	n. 6-5-3	3-17-6	6-11-7	4-5-11	6-11-4	
Cotton.										
New Orleans: Middling (cents p. lb.) . .	11.95	11.28	11.30	11.23	11.81	11.82	6.91	10.90	7.27	
New York: Middling (cents p. lb.) . . .	11.85	11.20	11.30	11.30	11.83	11.82	7.06	11.07	7.38	
Bombay: M. g. Broach f. g. (terminal market quotations; rup. p. 784 lb.) .	234	223	217	218	228 1/4	195 1/4	177 1/4	197	201 1/4	
Alexandria (talaris p. kantar):										
Sakellaris, f. g. f.	15.00	14.80	14.60	14.55	15.13	15.15	13.34	14.44	14.15	
Ashmuni-Zagora, f. g. f.	13.35	13.05	12.95	12.77	13.16	11.77	11.53	11.63	12.46	
Bremen: Middling (U. S. cents p. lb.) .	13.72	13.04	13.19	12.92	13.75	13.54	8.16	12.56	8.94	
M. g. Broach, f. g. (pence p. lb.) . .	n. 6.45	n. 6.20	n. 6.10	n. 6.10	n. 6.27	n. 4.90	n. 4.31	n. 4.81	n. 4.81	
Le Havre: Middling (Guilf; frs p. 50 kg.)	239.50	227.50	229.50	224.50	236.80	234.50	236.25	229.85	237.75	
Liverpool (pence per lb.):										
Middling, fair	n. 7.65	n. 7.35	n. 7.36	n. 7.30	n. 7.69	n. 7.25	n. 6.57	n. 7.11	n. 6.76	
Middling	6.65	6.35	6.36	6.30	6.69	6.20	5.37	6.02	5.61	
São Paulo, g. f.	6.80	6.50	6.53	6.47	6.85	6.06	n. 5.62	6.13	n. 5.87	
C. p. Oomra, superfine	5.90	5.66	5.57	5.51	5.80	4.79	4.66	4.92	5.22	
M. g. Broach, f. g.	5.75	5.47	5.43	5.37	5.66	4.61	n. 4.57	n. 4.62	n. 5.01	
Egyptian Sakellaris, f. g. f.	8.35	8.32	8.29	8.15	8.47	8.40	7.40	8.07	7.77	
Upper Egyptian, f. g. f.	7.83	7.49	7.43	7.18	7.47	6.62	6.58	6.64	7.01	

* Indicates that the product, during part of the period under review, was not quoted. — n. q. = not quoted. — n. = nominal. — a) Thursday prices. — b) Saturday prices.

1) Cottonseed: Sept.-Aug.; cotton: Aug.-July. — 2) 15 March: 232 1/4; 8 March: 230; 1 March: 235; 22 Feb: 237 1/4. — 3) Price 28 March. — 4) 15 and 8 March: 3.82; 1 March: 3.81. — 5) 15 and 8 March: 3.69; 1 March: 3.68. — 6) May futures. — 7) April-May futures. — 8) 15 March: 224; 8 March: 240; 1 March, and 22 Feb.: 245; Average Feb.: 246.

DESCRIPTION	12	5	29	22	AVERAGE			Commercial Season	
	April	April	March	March	March	April	April	1934	1933
	1935	1935	1935	1935	1935	1934	1933		
Bacon.									
London, Provision Exchange (a) (shill. p. cwt.):									
English, No 1, lean sizable.	88/-	89/-	90/-	96/-	89/7	87/6	...	91/2	...
Danish, No 1, sizable.	86/-	86/-	86/-	86/-	83/5	78/9	75/6	87/11	74/5
Irish, No 1, sizable.	85/-	85/6	86/-	90/-	83/8	87/3	89/-	90/5	83/4
Lithuanian, No 1, sizable.	80/-	80/-	80/-	80/-	77/-	71/9	65/1	82/-	65/5
Dutch, No 1, sizable.	83/-	83/-	83/-	83/-	80/-	73/7	67/3	84/-	67/6
Polish, No 1, sizable.	78/-	78/-	78/-	78/-	75/-	70/3	63/4	80/11	63/10
Swedish, No 1, sizable.	83/-	83/-	83/-	83/-	78/11	74/3	69/3	84/4	70/-
Canadian, No 1, sizable.	78/-	78/-	78/-	78/-	74/11	69/-	64/-	80/3	64/6
Butter.									
Copenhagen (b): Danish (cvs. p. quint.) . .	160.00	166.00	166.00	166.00	171.75	124.75	149.00	160.75	171.00
Leeuwarden, Commission for butter quotations (b): Dutch (cents p.kg.)	40	36	35	34	37	42	54	44 1/2	60
Zutphen, auction: Dutch (price for home consumption; cents p. kg.)	153	149	148	137	143	145	155 1/2	147 1/2	159 1/2
Germany (c) (fixed prices; Rm. p. 50 Kg.) 1):									
Butter with quality mark	130.00	130.00	130.00	130.00	130.00	127.25	91.86	129.04	112.72
Creamery butter	123.00	123.00	123.00	123.00	123.00	119 1/4	85 1/2	120.87	106.25
London (d): English creamery, finest quality (shillings p. cwt.)	107/4	107/4	107/4	112/-	110/10	109/8	140/-	109/6	140/10
London, Provision Exchange (a) (shill. p. cwt.):									
Danish creamery, unsalted.	98/-	100/6	102/-	101/-	105/4	83/3	93/7	98/8	103/9
Estonian, unsalted	n. q.	n. q.	n. q.	n. q.	n. q.	* 69/8	n. q.	* 67/11	* 84/4
Latvian, unsalted	78/-	77/6	n. q.	76/-	* 83/-	70/4	* 70/8	* 69/3	* 82/9
Dutch creamery, unsalted	78/-	72/6	73/-	73/-	81/-	73/3	91/6	80/4	103/4
Argentine, finest, unsalted	73/-	74/-	73/-	n. q.	n. q.	70/-	65/6	* 68/3	* 77/10
Siberian, salted	n. q.	n. q.	n. q.	n. q.	n. q.	* 67/9	* 62/4	* 66/-	* 73/5
Australian, finest, salted.	74/-	74/6	73/6	70/6	74/2	69/7	65/7	* 70/2	80/-
New Zealand, finest, salted	77/6	77/6	75/6	71/6	75/4	70/7	67/9	72/7	81/1
Cheese.									
Milan (lire p. quintal):									
Parmigiano-Reggiano, 1st quality, production 1932 2)	715.00	715.00	715.00	715.00	706.00	893.00	1,262.00	989.00	1,234.00
Parmigiano - Reggiano, 1st quality, production 1933 2)	620.00	620.00	615.00	615.00	603.00	762.50	1,050.00	806.00	1,015.00
Green Gorgonzola, mature, choice	505.00	505.00	500.00	475.00	464.00	423.75	488.75	412.60	473.20
Rome: Roman Pecorino, choice (lire p. q)	762.00	762.00	750.00	712.00	699.60	656.25	1,125.00	658.65	1,023.00
Alkmaar: Edam 40 + (40 % butterfat, with the country's cheesemark) factory cheese, small (florins p. 50 kg.)	13.50	14.00	13.00	16.00	16.00	19.50	20.25	20.98	22.40
Gouda: Gouda 45+ (whole milk cheese, with the country's cheesemark) home made (florins p. 50 kg.)	14.50	14.50	15.50	15.50	16.60	19.25	24.44	22.52	26.59
Kempten (c) (Rpf. p. 1/2 kg.):									
Soft cheese, green, 20 % butterfat . . .	26	26	26	26	26	* 19 1/2	18	23 1/2	20 1/2
Emmenthal from the Allgäu, whole milk cheese, 1st quality	75	75	75	75	75	71	74 1/2	71 1/2	72 1/2
London, Provision Exchange (a) (shill. p. cwt.):									
English Cheddar, finest farmers	86/-	86/-	86/-	86/-	86/-	* 95/4	93/-	* 83/5	86/3
English Cheshire, officially graded 3) . .	92/2	92/2	92/2	92/2	91/3	96/6	81/8	83/4	94/4
Italian Gorgonzola (d)	114/4	108/6	99/2	93/4	92/5	88/8	81/8	82/9	85/3
Dutch Edam, 40 + (d)	35/-	37/-	39/-	39/6	39/10	50/4	55/-	54/5	59/8
Canadian, finest white	61/-	61/6	61/-	61/-	61/-	54/3	64/6	54/-	59/8
New Zealand, finest white	44/9	45/3	46/-	45/3	45/5	42/10	38/2	46/5	46/10

* Indicates that the product, during part of the period under review, was not quoted. — n. q. = not quoted. — n. = nominal —
a) Average prices of Thursday and Friday morning. — b) Thursday prices. — c) Wednesday prices. — d) Average prices for the week.

1) See note on page 306 of the *Crop Reports* of April 1934. — 2) Prices of cheese made in 1932 are compared for the preceding years, with those of cheese made in 1931 and in 1930 respectively; prices of 1933 cheese with those of cheese made in 1932 and 1931. The yearly averages refer to periods from Sept. to August. — 3) From May 1934 onwards: National Mark, selected.

DESCRIPTION	12	5	29	22	AVERAGE						
	April	April	March	March	March	April	April		Commercial Season		
	1935	1935	1935	1935	1935	1934	1933		1934	1933	
Eggs (fresh).											
Antwerp, auction: Belgian, average qual. (frs. p. 100)	31.00	32.00	26 00	26.00	26 80	27.75	29.10	42.80	48.40		
Denmark (a). Danish for export (crs. per quintal)	64.00	64.00	64.00	60.00	70 00	61 50	51.50	103.60	105.85		
Roermond, auction: Dutch, 57/58 gr each, white (fl. p. 100) 1):											
Fixed price for export into Germany.	3.00	3.00	3 00	3 00	*) 3 12	3.29	1.81	3.96	3.48		
Price for other destinations	1.85	1.85	1.85	1 85	*) 2 04	2.25	1.81	3.34	3.48		
Warsaw (b). Polish, average weight 50 gr. each, different colours (zloty p. 1440, including box)	75.00	72.50	70.00	70.00	*) 75.33	80 21	79.79	106.50	123.60		
Berlin (c): German, big, new laid (Rm p. 100):											
marked "GIS", 65 gr. each	9.00	9.00	9.00	9.00	9.00	9.31	9.12	10.37	10.41		
marked "GIB", 55/60 gr. each.	8.00	8.00	8.00	8.00	8.00	* 8.00	7.18	9.03	9.05		
London, Egg Exchange (d) (sh. p. great hundred):											
English, National mark, specials	9 7 ¹ / ₂	9 9	9 7 ¹ / ₂	10 1 ¹ / ₂	10 5 ¹ / ₂	10 0 ¹ / ₂	10/-	15/5	13/10 ¹ / ₂		
Belgian, 15 1/2 lb. p. 120	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	* 11/0 ¹ / ₂	* 11/1		
Danish, 18 lb p. 120	9 7 ¹ / ₂	9/6	9 1 ¹ / ₂	9 1 ¹ / ₂	9 8 ¹ / ₂	8/11	8/4	12/5 ¹ / ₂	12/9 ¹ / ₂		
North Irish, 18 lb. p. 120	9 3 ³ / ₄	9 4 ¹ / ₂	9 6 ¹ / ₂	10 1 ¹ / ₂	10 3 ¹ / ₂	9 5 ¹ / ₂	9 1 ¹ / ₂	* 12/9 ¹ / ₂	15/1		
Dutch, all brown, 18 lb. p. 120	9/3	9/3	9/3	9 4 ¹ / ₂	9 11 ¹ / ₂	10/-	9/8	13/5	* 14/0 ¹ / ₂		
Polish, 51/54 grams each 2)	5 4 ¹ / ₂	5.6	5 7 ¹ / ₂	n. q.	* 6 8 ¹ / ₂	5/9	6 1 ¹ / ₂	6 10 ¹ / ₂	* 7 4 ¹ / ₂		
Chinese, violet	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	* 8 3 ³ / ₄	* 9/10		
Australian, 16 lb. p. 120	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	* 11 5 ¹ / ₂	* 12 4 ¹ / ₂		
Maritime freights 3).											
Shipments of Wheat and Maize.											
										1933-34 10)	1932-33 10)
Danube to Antwerp/Hamburg. (shill per Black Sea to Antwerp/Hamb. long ton)	n. q.	n. q.	n. q.	n. q.	n. q.	14/-	13/10	* 14/1	* 13/9		
St. John to Liverpool 4)	n. q.	n. q.	9/9	9/9	9/9	9/9 ¹ / ₂	9/7 ¹ / ₂	10/3	10/-		
Port Churchill to United Kingdom	1/6	1/6	1/6	1/6	1/6	1/9	n. q.	* 1/11	* 1/7		
Montreal to United Kingdom (shill per Gulf to United Kingdom 4). (480 lb.)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	* 2/9	* 3/-		
New York to Liverpool 4)	2/6	2/6	2/6	2/6	2/6	2/6	2/-	* 1 4 ¹ / ₂	* 1 8 ¹ / ₂		
Northern Range to U.K./Cont.	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6		
North Pacific to United Kingdom (sh. per long ton)	n. q.	n. q.	n. q.	n. q.	n. q.	* 1/9	n. q.	* 1/9	* 0.06		
Vancouver to Yokohama 4) (U.S.A. \$ p. short ton) 5)	17/-	17/-	17/-	17/6	17/3	19/3	18/6	20/1	20/10		
La Plata Down River 6) /Bahia Blanca to U.K./Continent	2.50	2.50	2.50	2.50	2.50	2.25	1.85	2.41	1.98		
La Plata Up River 7) /Necochea to U.K./Continent	12 1/4	12 1/4	12 14/-	12 14/-	12 13/9	13/9	13 1 1/2	14/1	14/-		
Western Australia to U.K./Continent	12 15/9	12 15/9	12 15/3	12 15/3	12 15/-	15 5 1/2	14/10	15/9	15/10		
	12 22/6	12 22/6	22/-	22/-	22/-	22/6	22/3	23 10 1/2	24 6 1/2		
Shipments of Rice.											
										1934	1933
Saigon to Europe (shill per Burma to U. K./Continent . . . long ton)	n. q.	n. q.	n. q.	n. q.	n. q.	23/-	n. 20/6	24 2 1/2	23 5 1/2		
	n. q.	n. q.	n. q.	n. 21/9	* 21/7	23 0 1/2	22/6	* 23/3	* 23 1 1/2		

* Indicates that the product or the maritime freight, during part of the period under review, was not quoted. — n. q. = not quoted. — n. = nominal. — a) Average prices for weeks beginning on Fridays indicated. — b) Average prices for weeks beginning on preceding Mondays. — c) Thursday prices. — d) Prices of preceding Monday.

1) See note on p. 307 of the *Crop Report* for April 1934. — 2) From Nov. 1933, 51/52 grams each. — 3) Rates for entire car goes; see note on p. 307 of the *Crop Report* for April 1934. — 4) Rates for parcels by liners. — 5) May-Oct. 1934 and from 25 Jan. 1935: Canadian \$. — 6) "Down River" includes the ports of Buenos Aires, La Plata and Montevideo. — 7) "Up River" includes the ports on the Paraná River as far as San Lorenzo. Cargoes from ports beyond San Lorenzo (Colastine, Santa-Fé and Paraná) are subject to an extra rate of freight. — 8) See note on p. 321. — 9) 11-16 March: 75 33; 4-9 March: 66 00, 25 Feb.-2 March: 100.00; Aver. Feb.: 125. 0. — 10) August-July. — 11) Freight in U. S. A. \$ per 100 lb. — 12) Minimum rates, see notes on p. 247 and 321.

Egg prices in Roermond.

Prices of white Dutch eggs, 57/58 grs. each, in Roermond, have not been published in the *Crop Report* for some time. In the following table are given the missing quotations expressed in florins per 100.

Date	Eggs for export in to Germany	Eggs for other destinations	Date	Eggs for export in to Germany	Eggs for other destinations
18 January 1935 . . .	4.80	2.15	22 February 1935 . . .	3.80	2.65
25 " " . . .	4.30	2.15	1st March " . . .	3.40	2.40
1st February " . . .	4.30	2.25	8 " " . . .	3.20	2.15
8 " " . . .	4.30	2.70	15 " " . . .	3.00	1.95
15 " " . . .	4.00	2.70			

Minimum rates of freight for Australian grain freights.

British shipowners and shipbrokers interested in the Australian trade have agreed on and the *Tramp Shipping Administrative Committee* have officially adopted on 28 March two schemes of minimum freight rates for the Australian trade to Europe and to the Far Eastern ports. One of the schemes fixes minimum freight rates for vessels with cancelling dates up to 15 April, while the other scheme applies to vessels with later cancelling dates. As regards the U. K. (Cont.) Mediterranean ports the rates are as follows.

For vessels up to 15 April 1935 cancelling.

from Western Australia	from S. Australia or Victoria	from Sidney, N. S. W.
20/- bulk ex silo	21/6 bulk	20/- bulk ex silo
22/6 in bags	24/- in bags	20/6 bulk ex bags
		22/6 in bags

Options: Adriatic 1s. 3d. extra on the entire cargo.

For vessels with cancelling dates on and after 16 April.

Rates for cargoes up to 8,250 tons net cargo. Reduction of 6d. per ton for vessels carrying more than 8,250 tons net cargo.

from Western Australia		from S. Australia or Victoria		from Sidney, N. S. W.	
16 April-15 May	After 15 May	16 April-15 May	After 15 May	16 April-15 May	After 15 May
21/- bulk	22/- bulk	22/- bulk	23/- bulk	21/- bulk ex silo	22/- bulk ex silo
23/6 in bags	24/6 in bags	26/6 in bags	25/6 in bags	21/- bulk ex bags	22/6 bulk ex bags
				23/- in bags	24/6 in bags

Options: 1/- extra on entire cargo for each additional port of discharge; 6d. extra Slow Irish port; 1s. 3d. extra on entire cargo Adriatic. All extras are over the basic rate.

AVERAGE MONTHLY PRICES BY COUNTRIES ¹⁾

GROUPS	DESCRIPTION	AVERAGE							Agricultural year 2)	
		March	Feb.	Jan.	Oct.-Dec.	Jan.-March	Jan.-March	1933-34	1932-33	
		1935	1935	1935	1934	1934	1933			
GERMANY (Prices in Reichsmarks per quintal)										
A I	†Wheat (Berlin) 3)	20.60	20.45	20.30	19.98	18.75	19.23	18.58	20.03	
	†Rye (Berlin) 3)	16.60	16.45	16.30	15.98	15.50	15.41	15.26	15.77	
	†Barley, feeding (Berlin) 3) 4)	16.50	16.35	16.20	15.88	15.98	16.35	16.17	16.57	
	†Oats (Berlin) 3)	16.70	16.55	16.40	16.08	14.04	11.96	14.62	13.25	
	†Red potatoes (Berlin)	4.80	4.80	4.80	4.80	3.06	2.64	* 3.04	* 2.67	
A II	†Beef, live weight (Berlin)	77.20	76.80	79.60	75.67	62.67	61.07	64.67	64.42	
	†Veal, live weight (Berlin)	65.00	58.40	62.40	69.20	63.20	63.13	68.55	71.36	
	†Pork, (220-265 lb.), live weight (Berlin)	89.80	91.60	94.00	99.73	88.27	73.40	85.03	77.40	
	†Milk, fresh (Berlin)	14.50	14.50	14.50	14.50	14.28	13.85	14.12	13.84	
	† Butter with quality mark	260.00	260.00	260.00	261.00	259.02	189.74	253.38	212.92	
	†Cheese, Emmenthal variety (Kempten)	150.00	148.00	146.00	145.50	142.00	149.00	142.25	153.00	
	†Fresh eggs (Berlin) (per 100)	9.00	11.12	12.00	11.69	10.85	9.75	10.78	9.95	
B I	Basic slag (Aachen) 5)	0.240	0.240	0.238	0.232	0.252	0.267	0.254	0.240	
	†Superphosphate of lime 18 % (Hildesheim) 5)	0.314	0.314	0.307	0.305	0.306	0.308	0.316	0.308	
	†Potash salts 38-42 % (mine stations) 5)	6) 6.86	6) 6.86	6) 6.86	6) 6.67	0.167	0.170	0.167	0.168	
	†Sulphate of Ammonia 5)	0.710	0.710	0.690	0.660	0.703	0.753	0.676	0.726	
	†Nitrate of lime 5)	0.990	0.970	0.950	0.930	0.970	0.970	0.952	0.952	
B II	Wheat bran (Hamburg)	12.20	12.19	12.07	11.89	11.90	8.36	11.06	8.74	
	†Linsed cake (Hamburg)	15.22	15.30	15.30	15.30	17.30	10.57	16.67	10.68	
	†Coconut cake (Hamburg)	15.22	15.30	15.30	15.30	17.11	10.59	16.58	10.91	
	†Groundnut cake (Hamburg)	14.42	14.50	14.50	14.50	16.03	10.64	15.89	11.14	
	†Crushed soya extraction residue (Hamburg)	12.92	13.00	13.00	13.00	14.65	9.22	14.49	10.03	
BELGIUM (Prices in Belgium francs per quintal)										
A I	Wheat (Antwerp)	60.20	60.25	60.00	62.70	57.80	78.05	63.90	79.15	
	Rye (Antwerp)	62.10	66.25	69.00	70.20	43.15	52.55	45.75	55.65	
	Barley (Antwerp)	81.50	82.50	82.25	79.70	56.90	69.75	58.45	67.80	
	Oats (Antwerp)	71.80	71.85	70.25	68.20	57.60	81.95	60.95	82.20	
A II	Beef, live weight (Curegem-Anderlecht)	409.00	425.00	435.00	446.00	486.00	530.00	503.00	493.00	
	Veal, live weight (Curegem-Anderlecht)	606.00	646.00	700.00	679.00	775.00	854.00	733.00	795.00	
	Pork, live weight (Curegem-Anderlecht)	392.90	387.00	380.00	402.00	468.00	735.00	496.00	666.00	
	Butter (Antwerp)	1,563.00	1,779.00	1,951.00	1,900.00	1,885.00	1,970.00	1,875.00	1,978.00	
	Eggs (Antwerp) (per 100)	26.80	35.00	42.25	60.50	39.25	47.60	45.95	52.50	
B I	Basic slag (Brussels) 5)	1.22	1.28	1.30	1.35	1.55	1.85	1.55	1.76	
	†Superphosphate of lime (Brussels) 5)	1.36	1.42	1.47	1.45	1.80	2.05	1.83	1.98	
	†Sylvinitic-Kainite, 14 % (Brussels)	13.50	13.50	13.50	13.50	15.00	29.50	25.00	28.65	
	†Nitrate of soda, 15 1/2 % (Brussels)	97.75	97.75	96.25	93.25	94.50	102.50	92.65	102.85	
	†Sulphate of ammonia, 20 % (Brussels)	82.50	82.50	81.00	78.00	82.00	80.50	79.10	77.40	
B II	Maize, Plate (Antwerp)	48.60	51.60	54.60	52.50	48.45	52.70	47.85	53.75	
	†Linsed cake (Brussels)	69.50	85.00	92.50	92.15	87.65	91.15	84.25	89.75	
	†Coconut cake (Brussels)	82.00	86.50	85.00	86.85	71.65	92.00	74.80	93.40	
	†Groundnut cake (Brussels)	79.00	80.00	85.00	85.35	84.35	94.85	77.60	94.45	
	†Palm kernel cake (Brussels)	77.00	80.00	83.00	85.35	73.15	85.33	75.80	84.70	
DENMARK (Prices in Danish crowns per quintal)										
A I	Wheat (Copenhagen)	10.31	10.81	10.94	11.81	12.01	11.37	* 11.96	* 11.65	
	Barley (Copenhagen)	12.28	13.12	14.00	13.90	12.25	11.65	* 12.13	* 11.89	
	Oats (Copenhagen)	12.72	13.03	13.44	13.33	12.12	11.27	12.12	11.30	
A II	†Pork, live weight	153.00	161.00	157.50	158.00	154.30	93.17	141.00	96.89	
	†Butter (Copenhagen)	171.75	197.50	204.00	204.23	143.17	165.30	161.05	168.20	
	†Eggs	70.00	87.50	102.50	163.10	85.53	100.33	101.05	105.47	

* Indicates that the product, during part of the period under review, was not quoted. — † Indicates that the series is published in the *International Yearbook of Agricultural Statistics* and used in the table of average monthly prices in gold francs per quintal. — § Indicates that the series is published in the *International Yearbook of Agricultural Statistics*.

1) Each quarter a list is published for several countries containing prices of plant (A I) and animal (A II) products sold by the farmer as well as of fertilizers (B I) and of concentrated feeding stuffs for livestock (B II) bought by the farmer. In the case where the market is not indicated, the price is the average one for the country. — 2) July for June. — 3) See note 2) p. 316 and note 3) on p. 317. — 4) See note 4) on page 317. — 5) Prices per unit of fertilizer material in a metric quintal. Price per 100 kg. of potash manure salt 40 %, free at buyer's station.

GROUPS	DESCRIPTION	AVERAGE							
		March	Feb.	Jan.	Oct.	Jan.	Jan.	Agricultural year	
		1935	1935	1935	Dec. 1934	March 1934	March 1933	1933-34	1932-33

DENMARK (continued)

B I	Superphosphate 18 %	6.45	6.45	6.35	6.16	6.42	6.30	6.28	5.94
	Potash salts 40 %	12.05	12.05	11.75	11.48	13.95	13.65	13.67	13.51
	Sulphate of ammonia	16.00	15.80	15.60	14.50	15.60	14.45	15.29	13.85
	Nitrate of lime	15.95	15.75	15.55	15.11	15.45	14.35	15.13	13.92
B II	Rye, imported (Jutland)	9.90	10.62	11.85	11.71	11.38	9.84	9.50	9.68
	Maize, Plate (Jutland)	11.75	11.78	12.05	11.94	12.82	10.08	11.72	9.75
	Wheat bran, Danish (Copenhagen)	10.50	11.32	11.72	11.19	10.62	9.26	10.03	n. 9.20
	Cottonseed cake (Copenhagen)	13.50	14.82	15.94	15.16	13.39	13.43	13.07	13.09
	Sunflower-seed cake (Copenhagen)	14.10	15.45	15.86	15.05	12.04	14.13	12.55	13.21
	Groundnut cake (Copenhagen)	13.65	14.95	15.46	14.98	13.74	15.82	13.63	15.02
	Crushed soya extraction residue (Copenhagen)	12.85	13.95	14.42	14.18	12.97	14.93	12.97	14.53

FRANCE (Prices in francs per quintal)

A I	†Wheat (Paris) 1)	77.80	80.50	77.75	109.25	126.00	105.40	124.00	112.50
	Rye (Paris)	58.00	58.00	60.00	63.35	71.65	77.65	72.25	80.15
	Barley, malting (Paris)	63.00	66.00	66.00	69.00	78.35	86.00	79.25	84.40
	†Oats (Paris)	42.25	50.15	45.10	51.15	45.40	76.55	48.55	80.75
	§Wine, red, 10° (Montpellier) (hectol.)	449.00	435.00	429.00	480.00	488.00	532.00	531.00	607.00
A II	†Beef, dead weight (2nd quality) (Paris)	1,055.00	1,058.00	994.00	1,030.00	1,178.00	1,160.00	1,099.00	1,096.00
	†Mutton, dead weight (Paris)(2nd quality)	345.00	349.00	350.00	370.00	490.00	744.00	522.00	705.00
	†Pork, live weight (Paris)								
B I	§Basic slag, 18 % (Thionville)	20.70	20.70	21.60	22.50	22.50	22.50	22.50	22.70
	§Superphosphate 14 % (North and East)	26.75	26.75	26.75	26.75	27.25	27.00	27.25	26.30
	§Sylvinit, minimum 12 % 2)	15.00	15.00	15.00	15.00	16.30	10.60	16.30	10.60
	Nitrate of soda (Dunkirk)	83.00	83.00	84.50	82.50	90.35	90.50	87.75	92.25
	Sulphate of ammonia 20.4 %	85.50	85.50	87.50	85.35	91.40	93.15	89.80	94.30
B II	Linseed cake (North)	59.00	70.00	72.50	72.90	70.25	69.75	65.25	68.30
	Coconut cake (Marseilles)	54.00 ³⁾	57.00 ³⁾	60.00 ³⁾	60.85	60.00	68.00	60.00	66.35
	Groundnut cake (Marseilles)	47.50	51.50	53.00	50.50	56.00	66.00	53.35	66.25

GREAT BRITAIN (Prices in shillings and pence: "A.", per cwt; "B.", per long ton).

A I	Wheat	4/7	4/8 1/2	4/9 3/4	4/11 1/4	4/4 3/4	5/3	4/11	5/7 3/4
	Barley, feeding	7/7	8/2 1/4	8/2 3/4	8/11 1/4	9/1 1/2	6/8 1/2	8/9 1/2	7/1
	Oats	6/10	7/-	6/10	6/7 1/2	6/1 1/2	5/10 3/4	5/9 1/2	6/2 3/4
	§Potatoes (London)	4/6 3/4	4/11 1/4	5/1 3/4	5/5 3/4	4/6 1/2	4/9 3/4	*4/8 1/2	*4/10 3/4
A II	†Beef, dead weight (London)	60/8	59/6	64/2	63/8	67/-	68/8	64/6	70/-
	†Mutton, dead weight (London)	107/4	98/-	95/8	87/1	81/3	86/8	86/-	79/2
	†Pork, dead weight (London)	85/2	86/4	88/8	88/3	90/-	79/4	83/4	71/5
	Butter (London)	110/10	119/-	116/2	108/9	109/8	153/5	123/1	148/8
	†Cheese, Cheddar (London)	86/-	86/-	86/-	85/4	92/8	97/1	82/3	96/1
	Eggs, fresh (London) (per 100)	8/8	11/3	12/8	17/10 3/4	11/3 3/4	12/0 3/4	12/9	13/4
B I	§Basic slag 14 % (London)	43/-	43/-	43/-	43/-	43/-	43/-	43/-	43/-
	Superphosphate, 16 % (London)	56/-	56/-	56/-	56/-	56/-	56/-	56/-	56/-
	Kainite 14 % (London)	54/-	54/-	54/-	54/-	60/-	67/-	61/2	65/4
	§Nitrate of soda, 15 1/2 % (London)	152/-	152/-	152/-	152/-	157/4	175/-	156/4	174/4
	§Sulphate of ammonia 20.6 % (London)	145/-	143/-	141/7	138/8	144/-	127/-	140/3	118/8
B II	Bran, British (London)	107/3	125/-	126/2	128/6	103/5	111/9	102/10	107/10
	Bran, middlings, imported (London)	104/3	113/6	119/10	126/8	93/11	98/10	94/1	104/7
	Linseed cake, English (London)	170/9	176/-	182/-	187/9	185/-	172/11	183/2	172/-
	Cottonseed cake (London)	95/9	100/-	100/-	96/4	89/4	119/11	92/-	114/7
	Palm kernel cake (Liverpool)	130/-	130/-	129/5	121/2	117/3	121/8	117/5	122/-

* †, §: See notes on page 322.

1) See note 5) on page 316. — 2) From August 1933: rich sylvinit, 18 %. — 3) 10°5. — 4) 8°5. — 5) Price in Coudekerque.

GROUPS	DESCRIPTION	AVERAGE								
		March	Feb.	Jan	Oct.	Jan.-	Jan.-	Agricultural		
		Dec.	March	March	March	March	March	year		
		1935	1935	1935	1934	1931	1933	1933-34	1932-33	
ITALY (Prices in lire per quintal)										
A I	†Wheat, soft (Milan)	100.00	95.00	94.00	89.30	85.80	108.35	84.35	102.95	
	Wheat, hard (Palermo)	119.00	110.00	106.00	105.35	104.65	122.65	104.90	120.00	
	Oats (Milan)	65.20	58.10	57.50	57.50	52.00	66.25	50.70	64.40	
	†Maize (Milan)	67.20	59.25	57.75	51.50	50.90	55.05	50.75	58.35	
	Rice, Maratelli (Milan)	126.90	124.25	126.85	127.15	150.45	136.85	144.10	146.15	
	Hemp, fibre	267.00	266.00	266.00	247.00	278.00	272.00	273.00	256.00	
	§Olive oil "Soprafino locale" (Bari)	545.00	535.00	508.00	533.00	448.00	405.00	440.00	425.00	
	§Wine, ordinary, 11° (Bari) (hectol.)	65.00	65.00	65.00	69.00	59.00	66.00	60.00	72.00	
	A II	†Beef, live weight (Milan) 1)	252.00	257.00	245.00	257.00	220.00	236.00	229.50	240.75
		Lamb, dead weight (Rome)	549.50	553.00	572.50	576.65	623.00	586.00	*615.00	*667.00
Pork, live weight (Milan)		354.00	330.00	337.00	356.00	399.00	414.00	395.00	419.00	
†Cheese (Parmigiano-Reggiano) (Milan)		603.00	595.00	597.00	618.65	829.00	1,015.00	857.00	1,023.00	
Eggs, fresh (Milan) (per 100)		27.00	32.25	38.75	50.60	36.15	35.10	40.00	39.45	
Wool, Italian (Rome)		1,067.00	1,050.00	968.75	832.00	*787.00	577.35	*727.00	*554.00	
B I		Superphosphate of lime, 14-16 % (Milan)	18.95	18.95	20.35	20.35	21.15	21.95	21.10	22.15
	Chloride of potash (Milan)	34.50	34.50	63.00	63.00	63.50	70.50	66.60	70.60	
	Nitrate of lime, 15-16 % (Milan)	77.95	77.10	71.80	71.55	80.35	80.95	78.45	78.05	
	Sulphate of ammonia, 20-21 % (Milan)	77.05	76.05	72.15	72.15	78.35	80.45	77.40	78.75	
	Cyanamide of calcium, 15-16 % (Milan)	57.00	57.00	54.75	54.75	59.30	60.60	58.70	59.70	
	Copper sulphate (Genoa)	*87.60	81.50	81.50	*81.85	95.75	95.45	96.85	103.60	
	Wheat bran (Genoa)	46.20	41.25	43.00	41.45	37.45	30.20	34.10	31.95	
B II	Rice bran (Milan)	46.50	45.60	45.60	38.85	32.10	36.45	27.25	34.65	
	Linseed cake (Milan)	62.10	62.50	63.00	60.70	53.60	46.75	46.20	48.95	
	Groundnut cake (Milan)	43.30	41.50	41.25	37.60	34.50	47.15	33.35	48.60	
	Rapeseed cake (Milan)	43.00	41.00	39.75	33.60	27.65	25.40	24.75	25.00	

NETHERLANDS (Prices in florins per quintal)

A I	Wheat (Groningen)	11.90	11.75	11.60	11.30	12.25	13.00	12.13	12.63
	Rye (Groningen)	7.21	7.27	7.54	7.26	7.12	3.87	6.06	4.07
	Barley (Groningen)	5.04	5.14	5.57	5.55	4.11	4.43	4.33	4.60
	Oats (Groningen)	6.31	6.02	6.20	5.98	5.23	3.97	4.99	4.29
	Peas (Rotterdam) . . . . .	...	...	...	9.16	8.21	9.39	*8.50	*11.69
	Flax, fibre (Rotterdam) . . . . .	...	...	...	47.83	51.00	52.33	48.92	48.95
	§Potatoes (Amsterdam) . . . . .	...	...	...	4.98	5.77	2.26	*5.29	*2.46
A II	Beef, dead weight (Rotterdam) . . . . .	...	...	...	56.83	58.00	58.30	57.71	60.96
	†Pork, live weight (Rotterdam) . . . . .	...	...	...	31.50	36.83	30.50	35.92	30.29
	†Butter for export (Leeuwarden)	37.00	52.25	58.37	47.91	46.67	63.33	53.15	70.00
	Butter for home consumption (Zutphen) 2)	143.00	151.50	152.25	150.25	149.37	158.37	154.17	...
	†Cheese, Edam 40 % (Alkmaar)	32.00	34.00	35.74	39.58	44.94	48.62	42.40	47.68
	Cheese, Gouda 45 % (Gouda)	33.20	38.50	39.74	45.84	49.80	56.44	48.64	55.72
	†Eggs (Roermond) (per 100) . . . . .	...	...	...	4.72	3.99	3.79	4.00	3.93
B I	Basic slag 3)	0.095	0.105	0.102	0.107	0.121	0.134	0.120	0.125
	Superphosphate, 17 %	1.59	1.59	1.67	1.70	1.87	1.96	1.91	1.94
	Kainite 3)	0.068	0.068	0.068	0.068	0.079	0.144	0.090	0.145
	Nitrate of soda 15 1/2 to 16 %	6.22	6.15	6.17	6.19	6.03	6.71	6.07	6.67
	Sulphate of ammonia, 20 1/2 % (Milan)	4.87	4.80	4.80	4.94	4.73	4.75	4.72	4.62
B II	Maize (Rotterdam)	4.90	5.00	5.30	5.11	4.89	3.65	4.53	3.66
	Linseed cake, Dutch	5.47	6.15	6.65	6.63	6.60	5.98	6.35	5.90
	Coconut cake, Dutch	5.99	6.40	6.40	6.02	5.23	6.03	5.27	6.06
	Groundnut cake, Dutch	4.83	5.40	5.74	6.01	5.34	6.19	5.17	6.19

POLAND (Prices in zlotys per quintal)

A I	Wheat (Warsaw)	17.58	17.92	18.36	19.16	20.68	31.57	22.09	30.46
	†Rye (Warsaw)	14.17	14.75	14.75	15.29	14.50	18.32	14.95	18.04
	†Barley (Warsaw)	19.35	21.37	21.97	20.94	15.46	16.98	*15.55	*17.11
	Oats (Warsaw)	14.72	14.23	14.00	15.29	11.82	15.96	13.69	16.65
A II	Beef, live weight (Warsaw)	56.25	52.00	55.40	61.72	68.33	59.00	67.30	67.30
	Pork, live weight (Warsaw)	62.75	59.25	60.20	67.87	96.67	104.00	98.65	108.00
	Butter (Warsaw)	280.00	274.00	249.00	282.00	317.00	311.00	311.00	336.00
	†Eggs (Warsaw) (per 100)	5.23	8.68	9.08	8.83	9.18	10.95	7.99	9.36

* †, §: see notes on page 322.

1) Price of December 1933: 266.00. — 2) Before January 1933: quotations in Maastricht (page 425 of the *Crop Report* of June 1933). — 3) Prices per unit of fertilizer material in a metric quintal.

GROUPS	DESCRIPTION	AVERAGE						Agricultural year	
		March	Feb.	Jan.	Oct.-	Jan -	Jan.-	1933-34	1932-33
		1935	1935	1935	Dec. 1934	March 1934	March 1933		

POLAND (continued)

B I	Superphosphate 1)	0.60-	0.60	0.60	0.61	0.62	0.62	0.62	0.62
	Potash salts, 25 % 2)	8.50	8.50	8.50	8.50	11.58	13.58	11.06	12.91
	Sulphate of ammonia 3)	20.70	20.70	20.70	20.70	23.33	25.00	23.95	25.00
B II	Wheat bran (Warsaw)	11.65	10.50	10.25	10.50	10.93	10.33	10.67	10.78
	Rye bran (Warsaw)	9.40	8.74	8.96	9.37	8.83	9.32	9.05	9.82
	Linseed cake (Warsaw)	17.55	16.50	16.50	16.79	17.68	20.13	17.90	19.96
	Rapeseed cake (Warsaw)	12.60	12.81	13.00	13.29	13.88	15.47	13.67	15.67

SWEDEN (Prices in Swedish crowns per quintal)

A I	Wheat (Stockholm)	16.94	16.94	16.82	16.10	17.05	17.46	16.94	17.46
	Rye (Stockholm)	15.97	15.94	15.77	15.25	15.46	16.10	15.55	15.94
	Barley (Stockholm)	13.25	13.00	12.90	12.75	* 12.35	* 10.75	* 11.64	* 11.07
	Oats (Stockholm)	11.62	11.84	11.67	11.64	11.77	8.53	11.10	8.97
A II	Beef, live weight (Göteborg)	* 48.50	48.50	48.00	46.27	36.77	31.17	37.10	32.30
	Pork, live weight (Göteborg)	* 68.50	65.60	70.10	58.76	45.22	57.35	49.37	61.05
	Butter (Malmö)	230.00	230.00	230.00	230.00	230.00	162.83	228.35	176.45
	Eggs (Stockholm)	90.50	111.50	111.60	153.33	79.67	86.33	90.47	92.50
B I	Superphosphate, 20 %	7.80	7.80	7.80	7.80	7.55	6.77	7.51	7.65
	Potash salts, 20 %	6.05	6.05	6.05	6.05	6.40	8.57	7.32	8.20
	Nitrate of soda	n. q.	n. q.	n. q.	n. q.	17.35	18.95	18.15	* 18.95
	Calcium cyanamide	n. q.	n. q.	n. q.	n. q.	16.50	16.50	16.50	* 16.50
B II	Maize, Plate	n. q.	n. q.	* 15.72	15.37	10.57	9.20	10.00	9.57
	Wheat bran	12.90	12.90	12.60	12.22	11.35	9.30	10.35	9.31
	Groundnut cake	16.36	16.95	16.83	16.41	15.13	15.00	14.80	15.24
	Cottonseed cake	14.40	15.31	n. q.	* 14.71	12.72	11.97	12.70	11.99
	Soya meal	15.46	15.87	15.93	15.81	14.38	13.87	14.08	14.25

CZECHOSLOVAKIA (Prices in Czech. crowns per quintal)

A I	Wheat (Prague) 4)	176.60	174.80	173.00	169.40	144.60	158.45	146.30	* 159.60
	Rye (Prague) 4)	135.50	134.00	132.50	129.50	103.90	84.75	98.20	97.50
	Maltng Barley (Prague) 4)	135.50	134.00	132.50	129.50	89.05	78.60	* 90.85	84.20
	Oats (Prague) 4)	120.40	119.20	118.00	115.60	72.90	72.80	77.40	78.00
	Edible potatoes	42.50	40.00	40.00	36.00	41.50	28.50	35.35	29.00
	Hops	4,745.00	4,745.00	4,195.00	3,956.65	3,411.65	2,061.65	3,774.00	2,106.00
A II	Beef, dead weight	750.00	725.00	725.00	725.00	733.00	783.00	744.00	775.00
	Veal, dead weight	775.00	575.00	587.00	625.00	596.00	708.00	644.00	754.00
	Pork, dead weight	775.00	725.00	700.00	766.00	697.00	1,017.00	782.00	1,031.00
	Butter	1,825.00	1,800.00	1,675.00	1,717.00	1,725.00	1,733.00	1,785.00	1,977.00
	Fresh eggs (per 100)	60.00	60.83	60.00	60.45	59.72	77.20	54.15	66.05
B I	Basic slag, 15 %	34.85	34.85	34.85	34.70	34.85	34.85	34.80	34.85
	Superphosphate, 16 to 18 %	48.50	48.50	48.50	48.50	50.05	48.95	50.75	50.75
	Kainite, 14 %	18.40	18.40	16.50	17.50	18.85	21.00	19.25	21.05
	Nitrate of soda	130.00	130.00	n. q.	n. q.	n. q.	* 147.00	* 125.00	* 147.00
	Sulphate of ammonia, 20 1/2 %	123.40	123.40	123.40	119.40	123.40	127.60	122.70	* 126.40
B II	Maize, imported	108.00	108.00	106.50	106.25	69.75	65.83	68.10	67.20
	Wheat bran (Prague) 5)	100.00	99.50	99.00	92.90	71.40	56.33	69.80	60.70
	Rye bran (Prague) 5)	98.00	97.50	97.00	90.90	70.40	55.83	69.20	60.80
	Crushed soya (Prague) 5) 6)	143.80	142.00	142.00	* 124.00	* 91.75	* 108.50	* 94.40	* 104.50
	Rapeseed cake (Prague) 5) 7)	118.50	117.50	117.50	* 105.75	85.00	93.60	84.25	96.50
	Linseed cake (Prague) 5) 8)	145.50	139.50	139.50	* 126.75	* 92.85	95.90	* 92.00	111.80
	Groundnut cake (Prague) 5) 9)	151.00	150.00	150.00	* 128.00	86.10	103.95	* 89.85	114.35

1) Prices per unit of fertilizer material in a quintal. — 2) New series from July 1934 onwards: Potash salts 20 %. — 3) New series from July 1934 onwards. — 4) Until the end of July 1934: average wholesale market prices; subsequently, buyers' prices. — 5) Until the end of July 1934: average wholesale market prices; Aug.-Nov.: manufacturers' selling prices; subsequently, wholesalers' selling prices. — 6) From Aug. 1934, soyabean cake, delivery at Lovosice. — 7) From July 1934: delivery at Lovosice. — 8) From Dec. 1932: delivery at Lovosice. — 9) From Nov. 1932: delivery at Střekov.

AVERAGE MONTHLY PRICES IN GOLD FRANCS PER QUINTAL ¹⁾

DESCRIPTION	March	Feb.	Jan.	Dec.	Nov.	Oct.	March	March	Year	
	1935	1935	1935	1934	1934	1934	1934	1933	1934	1933
Wheat										
Budapest: Tisza	9.98	10.05	9.96	9.63	9.78	10.11	6.39	* 10.06	...	7.76
Winnipeg: No 1 Manitoba	9.19	9.03	9.02	9.12	9.20	8.96	7.54	7.77	8.52	8.34
Chicago: No 2 Hard Winter	11.66	11.87	12.09	12.13	11.98	11.80	10.05	* 10.14	11.10	11.05
Buenos-Aires: Barletta	6.13	5.98	6.23	6.61	6.48	6.60	6.07	7.12	6.59	7.57
Berlin: Home grown	25.44	25.26	25.07	24.98	24.70	24.46	23.34	24.53	23.65	23.09
Hamburg (c. i. f.):										
No 2 Manitoba	10.68	10.87	11.05	11.37	11.04	10.42	9.18	10.77	10.22	10.47
Barusso	7.46	7.27	7.53	7.72	7.61	7.76	6.78	8.62	7.51	8.83
Antwerp:										
Manitoba No 1 (Atlantic)	10.25	10.93	10.85	10.96	10.88	10.85	8.61	10.47	10.18	10.55
Barusso	6.55	7.08	7.21	7.48	7.38	7.50	6.61	8.54	7.41	8.75
Paris: Home grown	15.79	16.34	15.78	21.26	22.74	22.53	25.88	20.36	24.71	22.41
Liverpool and London: (c. i. f.):										
German (on sample)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	6.21	n. q.	* 6.27	* 6.98
French (par échantillon)	n. q.	6.29	6.45	6.67	6.83	6.90	n. q.	n. q.	* 7.03	n. q.
Hungarian (on sample)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	6.12	n. q.	* 6.26	* 7.15
No 1 Manitoba (Pacific)	10.77	10.78	10.73	10.93	10.60	10.46	9.42	10.09	10.27	10.34
No 3 Manitoba (Pacific)	6.69	9.64	9.61	9.78	9.63	9.58	8.53	9.62	9.42	9.75
Rosafé	7.16	6.95	7.26	7.31	7.28	7.35	6.19	8.20	7.27	8.33
Australian	8.60	8.21	8.10	8.26	8.60	9.14	7.66	9.34	8.74	9.60
Milan: Home grown, soft	25.74	24.93	24.80	24.08	23.50	22.91	22.82	28.02	22.87	24.84
Genoa (c. i. f.):										
No 2 Manitoba	n. q.	9.77	9.56	10.24	9.84	10.20	8.90	9.95	9.72	10.36
No 2 Canadian Durum	n. q.	12.62	12.49	12.86	12.80	12.42	10.05	11.25	11.22	* 10.87
Rye										
Berlin: Home grown	20.50	20.32	20.13	20.02	19.76	19.52	19.39	19.24	19.32	18.54
Hamburg: Plate	6.59	7.00	7.22	7.59	7.15	7.76	5.35	7.10	6.54	6.86
Warsaw: Home grown	8.23	8.57	8.57	8.49	8.28	9.88	8.42	11.77	8.68	10.09
Minneapolis: No 2	7.58	8.32	9.05	9.62	9.11	9.04	7.17	7.24	8.49	8.66
Barley										
Braila: Average quality	7.72	8.83	n. q.	7.84	7.87	8.37	n. q.	n. q.	* 7.70	* 4.59
Prague: Maltng, average quality	20.87	20.64	20.40	16.91	16.65	16.40	11.74	11.98	14.48	* 12.86
Winnipeg: No 4 Western	5.80	6.05	6.65	7.36	7.09	7.72	5.46	5.31	6.42	5.59
Minneapolis: No 2 Feeding	9.39	10.90	11.34	11.62	10.72	10.31	6.07	5.71	8.30	6.72
Berlin: Home grown fodder	20.38	20.19	20.01	19.90	19.64	19.39	19.61	20.62	19.41	20.22
Antwerp: Danubian	7.26	8.82	9.57	9.77	10.00	10.27	7.18	7.73	8.70	7.17
Liverpool and London (c. i. f.):										
No 3 Canadian Western	8.97	9.52	10.06	10.16	9.58	9.44	7.92	8.09	8.79	8.18
Plate	6.72	7.49	7.79	8.15	7.90	8.39	5.82	7.24	7.30	6.97
Persian	6.46	7.51	8.19	8.63	8.63	8.79	5.83	7.23	7.33	* 7.25
Oats										
Winnipeg: No 2 White	8.07	8.59	8.92	9.07	9.03	8.37	6.78	6.87	7.81	7.13
Chicago: No 2 White	9.57	11.98	12.38	12.11	11.84	11.41	7.56	* 6.61	9.65	8.04
Buenos-Aires: Current quality	5.04	5.04	4.98	5.21	5.18	5.45	3.69	5.46	4.53	5.14
Berlin: Home grown	20.62	20.44	20.25	20.14	19.88	19.64	17.33	15.57	19.96	16.40
Paris: Home grown	8.58	10.18	9.16	9.36	10.77	11.01	8.74	14.42	10.05	12.50
London and Liverpool (c. i. f.): Plate	6.55	6.50	6.54	6.66	6.49	6.70	4.78	7.21	5.84	6.87

1) As gold franc, the Swiss franc, which still represents the franc of the former Latin Monetary Union, has been adopted. In cases where the difference between the rates of exchange of the national currency considered and its parity with the Swiss franc did not during a given month reach $2\frac{1}{2}\%$, the monthly average has been reduced on the basis of parity; in the contrary cases the average rate of exchange for the month has been utilized. Finally, when considerable fluctuations in the exchanges in the course of a particular month render it necessary, each weekly quotation has first been reduced to gold francs and the average of these reductions calculated.

DESCRIPTION	March	Feb.	Jan.	Dec.	Nov.	Oct.	March	March	Year	
	1935	1935	1935	1934	1934	1934	1934	1933	1934	1933
Maize.										
Braila: Danubian	6.32	6.73	n. a.	5.61	5.64	6.29	n. a.	n. a.	* 7.19	* 5.18
Chicago: No 3 Yellow	10.09	10.74	11.05	11.49	10.41	9.35	5.96	5.46	7.91	6.29
Buenos-Aires: Yellow Plate	4.60	4.75	5.75	6.46	6.23	6.43	6.02	5.49	5.86	5.24
Liverpool and London (c. i. f.):										
Yellow Plate	6.38	6.28	7.13	7.41	7.23	7.16	6.81	7.25	6.88	6.58
No 2 White African	6.42	6.99	7.78	8.20	7.86	8.00	n. a.	7.11	* 7.90	* 7.15
Milan: Home grown	17.30	15.55	15.23	14.31	13.35	13.00	14.19	13.77	14.50	13.35
Rice.										
Milan: Originario	27.98	26.96	27.04	26.80	26.17	25.83	27.71	25.83	27.24	26.01
Rangoon: No 2 Burma	7.64	7.70	7.24	7.09	7.78	8.22	5.63	* 7.32	6.91	7.37
Saigon: No 1 Round white	7.67	7.47	6.92	7.00	7.04	7.02	5.79	8.32	6.59	8.28
London (c. i. f.):										
No 2 Burma	10.63	11.01	10.49	9.92	10.52	11.95	8.90	11.18	10.17	11.08
No 1 Saigon	10.36	10.21	9.75	10.02	10.58	10.22	8.95	11.58	9.58	11.50
Tokyo: Chumai	14.24	14.52	14.23	14.38	14.96	14.85	11.85	13.29	13.30	12.47
Cotton.										
New Orleans: Middling	80.19	85.82	86.51	86.99	85.38	84.72	83.03	* 71.30	83.52	75.50
Bombay (terminal market): M. g. Broach,										
f. g.	71.59	79.61	79.40	74.79	69.98	66.75	66.82	68.15	69.02	69.93
Alexandria: Sakellariadis, f. g. f.	100.75	107.32	110.77	110.75	108.31	98.26	112.67	103.46	108.44	104.70
Liverpool:										
Middling american	90.55	97.98	99.57	99.72	96.95	95.85	94.67	83.48	95.28	87.50
M. g. Broach, f. g.	76.61	81.48	81.77	79.80	74.65	70.82	69.15	n. 72.84	71.87	n. 73.74
Sakellariadis, f. g. f.	114.64	122.37	125.44	126.37	123.91	113.00	128.45	116.55	123.01	118.95
Beef.										
Berlin: Home grown (live weight) . . .	95.34	94.85	98.31	97.32	92.87	90.15	77.06	75.09	83.54	78.55
Paris: Home grown (dead weight) . . .	91.15	88.30	87.09	88.91	98.86	104.75	95.82	116.52	104.22	112.78
London: Home grown (dead weight) . . .	87.97	88.34	95.61	96.29	94.37	95.46	101.48	105.34	101.57	111.23
Mutton.										
Paris: Home grown (dead weight) . . .	214.16	214.77	201.78	199.55	211.12	216.40	244.82	247.25	225.99	218.93
London: Home grown (dead weight) . . .	155.64	145.51	142.55	132.73	127.89	131.02	128.53	160.01	142.03	142.13
Pork.										
Denmark: Home grown (live weight) . .	100.78	108.49	106.36	106.41	108.33	107.44	111.45	89.50	107.97	93.20
Rotterdam: Home grown (live weight) .				66.66	67.70	62.49	74.99	65.61	68.74	71.07
Berlin: Home grown (live weight) . . .	110.90	113.13	116.09	118.56	125.23	125.72	101.76	90.16	107.88	98.52
Paris: Home grown (live weight) . . .	70.03	70.85	71.05	66.99	75.92	82.42	93.99	146.97	85.77	131.04
London: Home grown (dead weight) . . .	123.50	128.18	132.12	134.49	132.17	130.03	137.72	143.24	129.54	131.79

DESCRIPTION	March	Feb.	Jan.	Dec.	Nov.	Oct.	March	March	Year	
	1935	1935	1935	1934	1934	1934	1934	1933	1934	1933
Butter										
Copenhagen: Danish	113.13	132.92	137.76	146.31	143.44	126.91	102.02	125.45	111.34	131.90
Leeuwarden: Dutch	77.07	108.84	121.58	113.00	96.86	89.57	91.65	110.40	92.48	125.37
Hamburg: Schleswig-Holstein	321.10	321.10	321.10	322.30	322.33	323.57	319.54	229.96	314.83	277.77
London:										
Danish	152.74	177.73	175.33	185.01	182.07	164.98	144.78	169.95	150.88	174.82
Argentine	n. q.	138.08	n. q.	106.31	n. q.	n. q.	104.98	125.04	* 106.12	131.63
Australian, salted	107.55	129.17	118.95	106.12	110.38	99.29	108.34	125.59	107.41	134.63
New Zealand, salted	109.24	130.29	120.82	107.81	111.89	99.29	111.32	128.55	111.11	136.44
Cheese										
Milan: Parmigiano-Reggiano	155.24	156.13	157.49	161.58	163.32	163.49	213.35	271.32	190.75	264.15
Alkmaar: Edam 40 x	66.66	70.82	74.45	78.11	83.32	85.90	91.24	95.40	87.40	93.34
Kempten: Emmenthal variety	185.25	182.78	180.31	180.98	180.31	178.46	175.37	184.01	174.39	178.52
London:										
English Cheddar	124.71	127.60	128.14	129.23	128.52	125.96	146.01	163.11	* 127.81	145.90
Canadian	88.45	88.34	86.42	83.21	82.40	75.95	83.94	112.25	82.69	101.00
New Zealand	65.86	71.02	69.66	67.15	77.62	72.98	67.44	72.97	71.03	78.93
Eggs (per 100)										
Denmark: Danish (per quintal)	46.11	58.89	69.22	100.14	131.99	100.72	36.31	47.49	71.69	81.30
Roermond: Dutch for export				8.85	11.35	9.31	6.81	5.76	8.21	7.69
Warsaw: Polish, average quality	3.04	5.04	5.28	5.65	5.25	4.69	3.91	4.06	4.30	4.98
Berlin: German, big, special quality	11.11	13.73	14.82	14.88	14.82	13.66	11.79	11.11	12.67	12.83
London:										
Danish	5.96	7.63	8.20	10.79	12.67	9.57	6.00	6.96	8.08	9.10
Dutch	6.11	8.01	8.57	10.34	12.56	10.00	* 6.82	13.87	8.67	* 10.06

VARIATIONS IN THE INDEX-NUMBERS OF PRICES

On the following pages the index-numbers of prices of agricultural products and other price-indices of interest to the farmer are given as published in the different countries.

In addition to the original data summary tables are given below.

Percentage variations in the index-numbers for March 1935

COUNTRIES	Comparison with February 1935		Comparison with March 1934	
	Index-numbers of prices of agricultural products	Index-numbers of wholesale prices in general	Index-numbers of prices of agricultural products	Index-numbers of wholesale prices in general
Germany	— 0.4	— 0.2	+ 9.6	+ 5.0
England and Wales	— 2.5	— 0.6	+ 6.2	+ 0.8
Argentina	+ 0.7	—	+ 1.0	—
Canada	+ 1.1	0.0	+ 11.0	0.0
United States: Bur. of Agric. Economics	— 2.7	—	+ 28.6	—
United States: Bur. of Labor	—	—	—	—
Finland	— 1.1	— 0.0	— 0.0	— 0.0
Hungary	— 2.7	— 1.2	+ 23.7	+ 14.9
Italy	+ 2.2	+ 2.8	+ 14.9	+ 5.1
New Zealand	+ 0.7	—	— 2.6	—
Netherlands	0.0	— 2.7	— 1.9	— 5.2
Poland	—	—	—	—
Yugoslavia:				
plant products	+ 0.3	— 1.4	+ 12.3	— 0.5
livestock products	— 3.3	—	— 0.2	—

INDEX-NUMBERS OF PRICES OF AGRICULTURAL PRODUCTS AND OF COMMODITIES BOUGHT BY THE FARMER ¹⁾

DESCRIPTION	March	Feb.	Jan.	Dec.	Nov.	Oct.	March	March	Year	
	1935	1935	1935	1934	1934	1934	1934	1933	1934	1933
Germany										
(Statistisches Reichsamt)										
1913 = 100.										
Foodstuffs of plant origin	114.1	113.8	113.2	112.9	112.7	112.2	101.7	99.0	108.7	98.7
Livestock	76.7	74.9	76.2	76.8	78.5	79.3	66.5	61.3	70.9	64.3
Livestock products	102.8	107.2	108.8	109.5	110.5	109.1	102.5	84.6	105.0	97.5
Feeding stuffs	105.2	105.0	105.2	105.0	104.7	105.1	94.1	83.8	102.0	86.4
Total agricultural products	99.3	99.7	100.3	100.5	101.1	100.9	90.6	82.5	95.9	86.8
Fertilizers ¹⁾	67.3	67.3	67.0	65.3	65.0	68.4	71.6	72.7	68.6	70.2
Agricultural dead stock	111.0	111.0	111.0	111.0	111.0	111.2	110.8	111.2	111.1	111.6
Finished manufactures ("Konsumgüter")	124.4	124.5	123.5	122.5	122.1	120.8	115.2	109.5	117.3	111.7
Wholesale products in general	100.7	100.9	101.1	101.0	101.2	101.0	95.9	91.1	98.4	93.3
England and Wales										
(Ministry of Agriculture and Fisheries)										
Average for corresponding months										
of 1911-13 = 100.										
Agricultural products ²⁾	119	122	124	120	120	122	112	106	119	111
Feeding stuffs	92	92	98	98	96	98	85	90	91	85
Fertilizers	88	88	88	89	89	88	90	90	90	90
Wholesale products in general ³⁾	97.5	98.1	98.4	97.4	95.3	95.4	96.7	90.6	96.3	93.7
Argentina										
(Banco de la Nación Argentina)										
1926 = 100.										
Cereals and linseed	65.9	65.1	68.8	71.1	69.2	71.8	63.9	51.7	68.1	54.4
Meat	78.5	79.1	82.1	83.5	83.4	81.2	76.7	64.0	78.5	65.9
Hides and skins	74.4	74.4	75.4	73.0	69.6	67.5	79.7	49.9	71.6	63.9
Wool	64.4	65.7	68.0	68.3	72.9	80.4	89.6	40.8	84.3	54.6
Dairy products	75.8	75.9	66.8	66.4	65.5	68.4	56.6	51.8	62.3	57.4
Forest products	91.9	91.9	84.4	87.9	70.1	70.2	71.5	71.8	73.1	72.5
Total agricultural products	69.0	68.5	71.1	72.5	70.8	72.9	68.3	52.6	70.5	56.9
Canada										
(Internal Trade Branch										
of the Dominion Bureau of Statistics)										
1926 = 100.										
Field products (grain, etc.)	56.4	55.7	55.7	56.0	55.7	55.3	49.5	37.8	53.9	45.7
Livestock and livestock products	73.3	72.6	71.0	70.9	70.4	70.4	68.3	56.1	67.6	59.6
Total Canadian farm products	62.7	62.0	61.4	61.6	61.2	60.9	56.5	44.6	59.0	51.0
Fertilizers	75.8	75.8	75.8	75.8	75.8	75.8	79.7	71.7	76.2	73.8
Consumers' goods (other than foodstuffs, etc)	76.1	76.7	76.7	76.7	76.7	76.9	78.0	75.7	77.2	76.0
Wholesale products in general	72.0	72.0	71.5	71.2	71.2	71.4	72.0	64.3	71.6	67.2

¹⁾ For an explanation of the method of calculation of the index-numbers, reference should be made to the Institute's publication *Index-numbers of Prices of Agricultural Products and other Price-indices of interest to the Farmer* (Rome, 1930) as well as to the *Crop Report* (January 1932, pages 77 to 79; July 1932, page 502; March 1934, page 237; December 1934, page 696).

²⁾ Revised index-numbers due to the Wheat-Act payments and, from September 1934 the Cattle Emergency Act payments.

³⁾ Calculated by the *Statist*, reduced to base-year 1913 = 100.

DESCRIPTION	March	Feb.	Jan.	Dec.	Nov.	Oct.	March	March	Year	
	1935	1935	1935	1934	1934	1934	1934	1933	1934	1933
United States										
(Bureau of Agricultural Economics)										
Average 1909-10 to 1913-14 = 100.										
Cereals	111	114	115	116	109	109	79	36	93	62
Cotton and cottonseed	102	108	108	109	107	107	94	48	99	64
Fruits	90	90	87	85	94	98	97	65	100	74
Truck crops (market garden crops)	162	188	117	130	107	110	79	92	102	105
Meat animals	117	105	96	73	72	74	66	56	68	60
Dairy products	114	121	112	107	105	100	95	71	96	82
Chickens and eggs	97	119	114	119	125	108	74	56	89	75
Miscellaneous	92	101	111	113	123	137	98	53	108	83
Total agricultural products	108	111	107	101	101	102	84	55	90	70
Commodities purchased 1)	128	127	126	126	126	126	120	100	122	109
Agricultural wages 1)	—	—	86	—	—	93	2) 88	2) 72	88	80
United States										
(Bureau of Labor)										
1926 = 100.										
Cereals . . . . .	...	87.4	88.8	91.5	87.2	85.0	62.3	36.0	74.5	53.1
Livestock and poultry . . . . .	...	78.4	73.3	57.2	54.0	55.3	49.5	43.0	51.5	43.4
Other farm products . . . . .	...	76.8	76.6	75.1	75.8	75.4	67.7	45.3	70.5	55.8
Total agricultural products . . . . .	...	79.1	77.6	72.0	70.8	70.6	61.3	42.8	65.3	51.4
Agricultural implements . . . . .	...	93.6	92.7	92.7	91.9	92.0	85.2	83.1	89.6	83.5
Fertilizer materials . . . . .	...	66.2	66.5	65.3	64.6	65.7	69.5	61.9	67.1	65.9
Mixed fertilizers . . . . .	...	72.8	73.3	75.4	73.5	73.0	72.6	60.1	72.5	64.5
Cattle feed . . . . .	...	109.0	116.2	123.1	108.2	97.6	79.6	47.3	89.4	57.9
Non-agricultural commodities . . . . .	...	79.4	78.9	77.8	77.7	77.6	76.2	63.8	76.9	69.0
Wholesale products in general . . . . .	...	79.5	78.8	76.9	76.5	76.5	73.7	60.2	74.9	65.9
Finland										
(Central Bureau of Statistics)										
1926 = 100.										
Cereals	79	80	80	79	78	81	83	90	82	88
Potatoes	81	81	68	56	56	51	48	93	49	77
Fodder	63	63	64	64	64	63	86	67	72	72
Meat	78	78	76	73	70	70	71	66	71	64
Dairy products	78	80	82	86	88	80	74	67	75	75
Total agricultural products	75	76	75	76	76	74	75	72	73	74
Wholesale products in general	90	90	90	90	90	90	90	89	90	89
Hungary										
(Central Bureau Statistics)										
1913 = 100.										
Agricultural and livestock products	73	75	75	72	71	70	59	71	—	—
Wholesale products in general	85	86	86	84	83	82	74	82	—	—
Italy										
(Consiglio Provinciale dell'Economia Corporativa di Milano)										
1913 = 100.										
National agricultural products	324.8	317.9	315.6	316.2	314.9	313.4	282.8	289.8	297.9	280.7
Wholesale products in general	289.4	281.5	280.2	279.2	277.2	276.4	275.4	287.2	275.8	283.4
New Zealand										
(Census and Statistics Office)										
Average 1909-13 = 100.										
Dairy products	87.1	87.6	77.8	78.3	76.3	75.1	74.8	77.6	77.5	84.0
Meat	162.5	163.7	162.5	163.6	147.6	151.8	146.3	111.8	152.2	120.7
Wool	80.1	78.1	79.5	75.0	73.4	104.1	141.1	63.0	110.0	69.8
Other pastoral products	92.1	79.9	76.1	77.9	81.7	77.1	93.6	57.6	80.2	74.5
All pastoral and dairy products	105.9	105.2	100.4	98.9	93.9	101.7	110.4	80.5	104.5	88.4
Field products	125.7	123.7	126.3	121.5	121.4	120.4	121.7	115.0	120.6	115.8
Total agricultural products	106.5	105.7	101.2	99.3	94.4	102.0	109.3	81.4	104.7	89.2

DESCRIPTION	March 1935	Feb. 1935	Jan. 1935	Dec. 1934	Nov. 1934	Oct. 1934	March 1934	March 1933	Year	
									1933-34	1932-33
Norway										
(Kegl. Selskap for Norges Vel)										
Average 1909-14 = 100.										
Cereals	144	144	141	137	136	139	100	119	112	120
Potatoes	153	144	132	115	111	117	94	82	103	101
Pork	93	89	88	88	89	87	73	86	81	91
Other meat	142	139	141	136	129	137	122	113	110	109
Eggs	99	93	82	109	129	129	68	76	85	93
Dairy products	134	133	133	133	132	132	130	119	126	124
Concentrated feeding stuffs	115	118	120	121	120	117	99	100	96	104
Maize	101	108	110	110	110	114	85	87	83	90
Fertilizers	77	76	74	74	72	72	87	92	87	89
Netherlands										
(Bureau of Agriculture)										
Average 1924-25 to 1928-29 = 100.										
Plant products	52	54	54	55	58	62	60	40	59	42
Livestock products	48	48	49	49	48	48	54	48	53	51
Total agricultural products	49	49	50	51	51	52	55	46	55	49
Agricultural wages	71	71	71	71	71	71	74	83	74	81
Wholesale products in general 1)	50.7	52.1	52.8	52.8	52.1	52.1	53.5	48.7	2) 52.8	2) 50.1
Poland										
(Central Bureau of Statistics)										
1928 = 100.										
Raw plant products . . . . .	...	...	33.1	33.2	32.3	35.6	35.1	45.6	35.6	41.1
Meat animals . . . . .	...	...	29.5	32.5	33.9	34.8	40.6	43.5	36.7	42.5
Dairy products and eggs . . . . .	...	...	40.4	43.3	47.1	39.8	45.8	44.7	41.2	46.7
Products directly sold by farmers . . . .	...	...	33.3	34.8	35.6	36.1	38.9	44.8	37.0	42.6
Flour and groats . . . . .	...	...	38.3	38.8	38.4	40.2	37.6	53.3	38.8	47.8
Meat and lardfat . . . . .	...	...	34.9	36.7	38.2	40.2	46.3	51.2	43.5	49.8
Sugar, alcohol, beer . . . . .	...	...	85.6	85.6	85.6	85.5	90.1	90.1	88.6	90.3
Products of agricultural industries . . . .	...	...	52.6	53.4	53.8	55.0	57.8	64.6	56.7	62.4
Total agricultural products . . . . .	...	...	42.8	44.0	4.6	45.5	48.2	54.6	46.8	52.4
Commodities purchased . . . . .	...	...	68.4	68.5	68.3	68.8	72.5	73.2	70.6	72.9
Wholesale products in general . . . . .	...	...	52.9	53.5	53.6	54.4	57.3	59.8	55.8	59.1
Yugoslavia										
(National Bank of the Kingdom of Yugoslavia)										
1926 = 100.										
Plant products	61.1	60.9	62.9	57.9	59.1	58.8	54.4	61.7	57.4	57.2
Livestock products	55.2	57.1	58.6	55.8	55.6	58.4	55.3	58.0	55.4	57.1
Industrial products	64.8	66.0	65.4	64.9	65.3	66.0	69.2	73.6	67.4	70.8
Wholesale products in general	63.0	63.9	64.4	62.3	62.7	63.6	63.3	67.0	63.2	64.4

1) Calculated by the the Central Statistical Bureau of the Netherlands, reduced to the base 1925-1929 = 100 — 2) Calendar year.

**RECIPROCAL PARITIES OF THE VARIOUS CURRENCIES IN WHICH THE PRICES ARE QUOTED
IN THE MONTHLY AND THE QUARTERLY PRICE REVIEWS (1)**

COUNTRIES	Unit of Currency	Germany	Argentina	Belgium	Canada (2)	Denmark	Egypt	Spain	Switzerland	United States (3)	France (4)	Great Britain	Hungary	India	Italy	Japan	Netherlands	Poland	Romania	Czechoslovakia
Germany	Reichsmark	1.000	0.561	11.898	0.238	0.889	4.819	1.235	0.403	6.080	0.979	1.362	0.653	4.526	0.478	0.593	2.123	39.825	9.648	
Argentina	Paper peso	1.782	1.000	21.203	0.424	1.584	8.586	2.200	0.718	10.833	1.744	2.427	1.163	8.064	0.851	1.056	3.872	70.959	17.191	
Belgium	Franc (2)	0.084	0.047	1.000	0.020	0.075	0.040	0.104	0.034	0.511	0.082	0.114	0.055	0.380	0.040	0.050	0.178	3.347	0.811	
Canada	Dollar (3)	4.198	2.356	49.948	1.000	3.731	20.230	5.183	1.693	25.524	4.110	5.718	2.740	19.000	2.006	2.488	8.914	167.181	40.501	
Denmark/Sweden	Crown	1.125	0.631	13.385	0.268	1.000	5.422	1.389	0.454	6.840	1.101	1.532	0.734	5.092	0.538	0.667	2.389	44.803	10.854	
Egypt	Piastre	0.207	0.116	2.469	0.049	0.184	1.000	0.256	0.083	1.262	0.203	0.283	0.135	0.939	0.099	0.123	0.441	8.264	2.002	
Spain/Switzerland	Peseta/Fr.	0.810	0.455	9.638	0.193	0.720	3.903	1.000	0.327	4.925	0.793	1.103	0.529	3.666	0.387	0.480	1.720	32.258	7.815	
United States	Dollar (4)	2.479	1.391	29.500	0.591	2.204	11.948	3.061	1.000	15.074	2.427	3.377	1.618	11.221	1.185	1.469	5.265	98.737	23.920	
France/Indo-China (5)	Franc	0.164	0.092	1.957	0.039	0.146	0.793	0.203	0.066	1.000	0.161	0.224	0.107	0.744	0.079	0.097	0.349	6.550	1.587	
Great Britain	Shilling	1.021	0.573	12.154	0.243	0.908	4.923	1.261	0.411	6.211	1.000	1.391	0.667	4.623	0.488	0.605	2.169	40.680	9.856	
Hungary	Pengő	0.724	0.412	8.736	0.175	0.653	3.580	0.905	0.296	4.464	0.720	1.000	0.479	3.323	0.351	0.435	1.559	29.240	7.084	
India	Rupee	1.532	0.860	18.231	0.365	1.362	7.384	1.892	0.618	9.316	1.500	2.087	1.000	6.935	0.732	0.908	3.254	61.020	14.783	
Italy	Lira	0.221	0.124	2.629	0.053	0.196	1.065	0.273	0.090	1.343	0.216	0.301	0.144	1.000	0.106	0.131	0.469	8.799	2.131	
Japan	Yen	2.092	1.174	24.897	0.498	1.860	10.084	2.583	0.843	12.723	2.049	2.850	1.366	9.471	1.000	1.240	4.443	83.333	20.189	
Netherlands	Florin	1.687	0.947	20.077	0.402	1.450	8.132	2.083	0.681	10.260	1.652	2.298	1.101	7.637	0.806	1.000	3.583	67.200	16.280	
Poland	Zloty	0.471	0.264	5.603	0.112	0.419	2.269	0.581	0.190	2.863	0.461	0.641	0.307	2.131	0.225	0.279	1.000	18.755	4.543	
Romania	Leu	0.025	0.014	0.299	0.006	0.022	0.121	0.031	0.010	0.153	0.025	0.034	0.016	0.114	0.012	0.015	0.053	1.000	0.242	
Czechoslovakia	Crown (6)	0.103	0.058	1.233	0.025	0.092	0.499	0.128	0.042	0.630	0.102	0.141	0.067	0.469	0.049	0.062	0.220	4.127	1.000	

(1) Each quotation shows the par-value of the monies named in the column headed "Unit of currency" calculated in terms of the currency of the Countries printed in the heading. — (2) New parity as from 31 March 1935. — (3) Till 31 January 1934 also parity of the United States. — (4) New parity as from 31 January 1934. — (5) One gold piastre equals 10 francs. — (6) From 17 February 1934 the crown represents only $\frac{1}{10}$ of its previous gold value.

MONTHLY CROP REPORT AND AGRICULTURAL STATISTICS

The following explanations refer to crop conditions quoted in the crop notes and in the tables. — Crop condition according to the system of the country: Germany, Austria, Hungary, Luxemburg and Czechoslovakia: 1 = excellent, 2 = good, 3 = average, 4 = bad, 5 = very bad; France: 100 = excellent, 70 = good, 60 = fairly good, 50 = average, 30 = bad; Estonia, Lithuania, Poland and Sweden: 5 = excellent, 4 = good, 3 = average, 2 = bad, 1 = very bad; Netherlands: 90 = excellent, 70 = good, 60 = fairly good, 50 = below average; U. S. S. R.: 5 = good, 4 = above the average, 3 = average, 2 = below average, 1 = bad; Canada: 100 = crop condition promising a yield equivalent to the average yield of a long series of years; United States: 100 = crop condition which promises a normal yield; Egypt: 100 = from June 1934, crop condition which promises a yield equal to the average yield of the last five years. — For other countries the system of the Institute is employed: 100 = crop condition which promises a yield equal to the average of the last ten years.

WHEAT

World trade in wheat in March showed an appreciable increase on the previous months but it is still only of modest dimensions. During the eight months from August to March world exports barely reached 355 million bushels, which is 21 million bushels below the very poor figure recorded in the same period last year. If the estimate we made in March, forecasting a probable total of exports of 570 million bushels for the whole year, was to be borne out, the world demand in the last four months (April to July) would have to amount to about 54 million bushels per month. This figure appears very high when compared with the average of 44 million recorded during the first two thirds of the year. A definite statement on the total wheat movement for this year can-

World net exports of wheat (including flour in terms of wheat)
(Million bushels)

Months	1934-35	1933-34	1932-33	1931-32	1930-31	1929-30
August	51	45	41	66	77	71
September	42	51	48	78	74	57
October	50	46	62	74	84	60
November	43	41	54	67	77	51
December	38	51	60	64	59	50
January	42	48	62	62	54	48
February	41	44	64	73	70	45
March	48	50	64	74	67	50
April	—	35	40	70	62	42
May	—	44	52	67	81	50
June	—	45	42	59	67	51
July	—	46	44	45	52	53
Total August-March	355	376	455	558	562	432
Total March-April . . . . .	...	170	178	241	262	196
Total Season	1) 570	546	633	799	824	628

1) Estimate March, 1935.

not be made at present as the demand of the importing countries in the months immediately preceding the harvest generally shows considerable and sudden variations owing to the influence of the new crop prospects. The most probable outcome is a world export total falling short of our last estimate and, consequently, that of last year, by some millions of bushels. This result is mainly due to the very small European demand which has turned out to be smaller than all expectations. The magnitude of the internal supplies in most of the European countries resulting either from the plentiful harvests of 1934 or from the stocks carried over from previous years, would not have caused such an appreciable reduction in demand if these countries had not at the same time taken steps to support domestic wheat prices and, in a more radical and general way, to protect national currencies, which constitute an increasingly difficult obstacle to the move-

Net imports of wheat into Europe (including flour in terms of wheat).

(Million bushels)

Months	Season 1934-35			Season 1933-34		
	United Kingdom and Irish Free State	Other European countries	Total Europe	United Kingdom and Irish Free State	Other European Countries	Total Europe
August	18	14	32	19	15	34
September	20	16	36	22	13	35
October	18	13	31	23	14	37
November	17	12	29	22	13	35
December	20	12	32	18	10	28
January	12	10	22	14	10	24
February	16	10	26	16	11	27
March	20	11	31	22	15	37
April	—	—	—	21	13	34
May	—	—	—	20	14	34
June	—	—	—	19	14	33
July	—	—	—	21	14	35
Total August-March	141	98	239	156	101	257
Total April-July . . . . .	...	...	...	81	55	136
Total season	1) 225	1) 165	1) 390	237	156	393

1) Estimate March 1935.

ment of goods. Net European wheat imports in the first eight months of the year were thus 18 million bushels smaller than those of last year. The decline is mainly due to the reduced purchases of the British Isles, but other countries have also restricted their imports to an extent small in itself but considerable when the low level to which they had been reduced last year is taken into account. The European demand as a whole, however, will show a firmer tendency in the last months of the year, especially if the condition of crops gives grounds for expecting a rise in international prices.

So far as the new crop prospects are concerned, the available information may be summarised as follows.

The area sown to wheat in Europe was estimated last month to be a little more than 77.9 million acres, an increase of 1.3 million acres on the acreage cultivated in 1934. The new statistical data received by the Institute in May are not considerable. Estimates of wheat sowings were made by France and Italy indicating a decrease of about 250,000 acres from those of last year. Germany supplied an estimate of the loss of sowings experienced during the winter which are very slight this year (0.6 %) while last year they were more than 250,000 acres (5.9 %). Thus there are no reasons for changing the figure given last month for the total area cultivated to wheat in Europe as the modifications made in the previous estimates cancel each other to a large extent and finally involve only a negligible modification.

It is obviously still too early to form any opinion of the crop which this record acreage will yield. We indicated last month that, if the average yield of the last five years is assumed, this area would give a crop of about 1,580 million bushels, or a little more than the crop of 1934 which was 1,522 million bushels, but it is clear that the result will depend very largely on the course of the season and the influence of the weather on the yields in various countries.

The condition of the crops in Europe was fairly satisfactory on the whole at the beginning of May. Except in the Mediterranean countries, where there has been insufficient rain, rainfall on the Continent was normal in April and in some countries was even above the average. Temperatures were rather irregular everywhere and at the end of April and during the first decade of May cold waves, accompanied by hoarfrost and sometimes even by heavy falls of snow, occurred in nearly all parts. It was feared that this sudden return of wintry conditions caused some appreciable damage to crops, but their short duration and the rains which followed limited the damage to small proportions. Weather became rather fine in the first half of May in most districts with the exception of the Mediterranean zone where the much needed rains fell though somewhat too late. Temperature, however, continued to be below normal. The low temperature which prevailed almost everywhere on the Continent during the greater part of April and the first three weeks of May delayed the growth of crops which are considerably backward when compared with the normal. But, in the main, in spite of the delay, the condition of the winter crops, particularly wheat and rye, in the middle of May, in most countries, was thought to be as good or better than it was at the same time a year ago. The conditions of the spring crops was less satisfactory. The outcome thus still depends a great deal on the course of the season up to the time of harvesting. Fine weather with a gradual rise in temperature is necessary to assure good yields in most of the European regions.

The weather conditions which prevailed in the U. S. S. R. from the beginning of the spring up to the middle of May were generally favourable to the cereal crops and their condition is judged to be satisfactory. Intermittent rains fell in all the chief cereal growing regions, assisting the growth of the winter crops and assuring the germination of the spring seedings which were put in the ground much earlier than last year. The extreme cold and frost of the end of April and the first days of May were felt most in the north, where winter sow-

ings are small in extent and where spring sowings are late. The cold was not so severe in most of the central and southern zones. Damage does not appear to be great.

The estimate of the winter wheat crop of the United States based on crop condition on 1 May, places production at 431.6 million bushels, a slightly smaller figure than that made on 1 April (435.5 million bushels). According to this estimate, the production of winter wheat in 1935 will exceed that obtained last year by 26.6 million bushels but it is nevertheless small, amounting only to 75 % of the average outturn of the five years 1929 to 1933.

This decline is the result of the loss of sowings caused by winter frosts and the spring drought in the east of the Great Plains. It is estimated that the area of winter wheat which will be harvested will be about 30.5 million acres of a sown acreage of about 44.3 million so that the loss of sowings amounts to 13.8 million acres, or 30 % of the total.

It is still possible, however, that an increase will be made in this estimate if the season becomes more favourable. Rain fell in good quantities in the first half of May over the whole of the cultivated regions and greatly benefited the crops in all areas where they had not been definitely injured. In some districts the rain was excessive and a return of fine weather is desirable. The spring wheat crops have derived great benefit up to the present from the favourable weather and are completely satisfactory. In view of the mediocre winter wheat crop, the United States have great need of a good harvest of spring wheat in order to assure internal supplies during the coming year as large stocks carried over from previous harvests will not be available as in the present year.

The plentiful rains experienced in Canada during April have provided the moisture which is required for the good germination of the seedings, but they have also impeded sowing which is much later than usual this year. The area which farmers intended to sow to spring wheat on 1 May was 22,808,000 acres. If account is taken of the area sown to winter wheat, the total area under wheat this year will be 23,345,000 acres, or about 640,000 acres (3 %) less than last year and 2,600,000 acres less than the average of the five years 1929 to 1933.

Production in India seems sufficient to meet internal needs and, in addition, to leave a small surplus for export. In Syria and Palestine, a plentiful crop is expected to follow the good rains of recent weeks. Crop prospects in Japan are fairly good.

In North Africa, the rains which fell after a long drought saved the crops which may yet be average in Algeria and Tunisia, but a very poor crop is expected in Morocco. Egypt expects a production slightly larger than that of 1934.

G. CAPONE.

CEREALS

Germany: Weather was cool and wet in general during April.

Rather heavy rains fell in Westphalia and in the Rhine provinces. Field work was held up very much owing to the wet weather.

The average proportion of the sown acreage abandoned as a result of winter damage was 0.6 % (against 5.9 % last year) in the case of winter wheat, 0.5 % (1.3 %) in the case of winter rye, 0.5 % (3.1 %) for winter barley and 0.3 (1.2) for winter spelt.

Crop condition of winter spelt on 1 May in the system of the country was 2.3 as at 1 April 1935, compared with 2.6 on 1 May 1934.

Austria: The cold weather experienced at the end of March continued throughout the first decade of April causing exceptionally heavy snow falls with night frosts. Weather became warmer in the middle of April.

Weather was more genial during the third decade except for a few wet days.

The winter cereal seedings were impeded by the cold weather. Weeds spread rapidly. Winter wheat is comparatively short. Damage resulting from the severe winter is reported from some places. Winter rye has a good appearance but winter barley suffered from night frosts.

Sowings of spring cereals are unusually protracted. An increase in the area sown to spring wheat in the plains is recorded. The sowings sprouted slowly but evenly.

Belgium: The weather was wet and cold in April. Crops look well on the whole. Oats and barley were sown late. It is expected that the area sown to oats this year will be a little smaller than that of 1934.

According to the most recent estimate, the area cultivated to spelt this year is about 38,700 acres against 35,900 in 1933-34 and 39,900 on the average of the five years ending 1932-33. Percentages 107.8 and 97.0. The figures for meslin are respectively: 13,000 acres, 8,500 acres and 10,300 acres. Percentages: 153.7 and 126.8.

Bulgaria: Weather was comparatively warm during the whole of May except on a few days in the middle and at the end of the month when weather was rather severely cold and accompanied by rain and hail.

These conditions caused a delay in the growth of winter cereals.

The conditions, however, were favourable on the whole both to field work and to the growth of spring cereals.

According to the most recent estimate, the area cultivated to meslin this year is about 174,000 acres against 212,000 in 1934 and 242,000 on the average of the five years ending 1933; percentages 82.4 and 72.0. The area cultivated to spelt this year is about 24,700 acres against 24,300 in 1934 and 27,100 on the average of the five years ending 1933; percentages 101.6 and 91.2.

Estonia: Temperature showed much variation in April. The first half of the month was relatively cool and the second fairly warm except for the last four days which were very cold. Rainfall was greater than in the preceding month. The difference between day and night temperatures was very pronounced and the crops were adversely affected. The condition of winter cereals at the end of April was average and not as good as in the autumn. It is certain that no increase in sowings of spring wheat will be undertaken.

Crop condition of wheat in the system of the country on 1 May was 2.9 against 3.5 on 1 December 1934.

Irish Free State: The weather in April was broken with much rain, except during the last two weeks when dry genial weather prevailed.

No damage or loss of crops was notified. All winter sown cereals looked promising.

Most of the spring sowings were completed under satisfactory weather and soil conditions.

Area and Crop Condition.

COUNTRIES	AREA SOWN					CROP CONDITION (†)											
	1935	1934	Average 1929 to 1933	% 1935													
				1934 = 100	Aver. = 100	I-V-1935			I-IV-1935			I-V-1934					
						a)	b)	c)	a)	b)	c)	a)	b)	c)			
Thousand acres																	
WHEAT																	
Germany . . . (w)	4,609	4,927	4,435	93.5	103.9	2.4	—	—	2.4	—	—	2.9	—	—			
*Austria . . . (w)	...	548	502	...	...	2.0	—	—	2.0	—	—	2.6	—	—		
Belgium . . . (s)	...	21	22	...	...	2.0	—	—	—	—	—	2.2	—	—		
Bulgaria . . . (w)	381	379	396	100.2	96.0	—	—	—	—	100	—	—	—	—			
Spain . . .	3,037	3,057	2,988	99.3	101.6	—	—	—	—	—	—	—	—	—			
Finland . . . (w)	11,063	11,039	11,084	100.2	99.8	—	—	—	—	—	—	—	—	—			
France 1) . . (w)	56	45	31	109.8	181.4	—	—	—	—	—	—	—	—	—			
Greece . . . (s)	13,091	12,863	12,612	101.8	103.8	72	—	—	—	—	—	67	—	—			
Italy . . . (w)	143	339	370	42.3	38.8	72	—	—	—	—	—	67	—	—			
Latvia . . . (s)	2,020	1,983	1,479	101.9	136.6	—	—	—	—	—	—	—	—	—			
Lithuania . . (w)	12,166	12,031	12,079	101.1	100.7	—	—	—	—	—	—	—	—	—			
Luxembourg . .	262	349	153	—	172.0	—	—	—	—	—	—	—	—	—			
*Netherlands . (w)	207	210	146	99.0	142.3	—	—	—	—	—	—	—	—	—			
Poland . . . (w)	425	403	370	105.5	115.1	103	—	—	2.0	—	—	113	—	—			
Romania . . . (w)	40	40	27	100.0	149.4	2.0	—	—	—	—	—	2.5	—	—			
*Switzerland . (w)	...	303	180	...	...	a) 76	—	—	—	—	—	—	—	—	a) 71	
Czechoslovakia (w)	3,794	3,774	3,763	100.5	100.8	—	3.0	—	—	—	—	—	—	—			
Yugoslavia . . (w)	7,858	6,824	6,899	115.1	113.9	—	—	—	e)	—	—	3.4	—	—			
Total Europe . .	...	141	127	...	...	103	—	—	—	100	—	—	—	—		
U. S. S. R. . . (w)	4) 2,172	2,099	1,995	103.5	108.9	2.2	—	—	—	—	—	2.9	—	—	94		
Canada . . . (w)	215	230	91	93.6	236.0	...	...	...	—	—	—	2.3	—	—		
United States . (w)	5,354	5,208	5,184	102.8	103.3	...	...	...	—	—	—	—	—	—
Total America . .	66,893	65,800	64,102	101.7	104.4	—	—	—	—	—	—	—	—	—			
India 9) . . .	31,836	29,893	24,987	106.5	127.4	—	—	—	—	—	—	—	—	—			
*Japan . . . (w)	5) 537	6) 426	6) 658	126.2	81.6	—	—	85	—	—	—	—	—	—	65		
Syria and Lebanon	7) 22,808	6) 23,559	6) 25,278	96.8	90.2	—	—	—	—	—	—	—	—	—	—		
Total Asia . . .	5) 30,497	6) 32,945	6) 37,780	92.6	80.7	—	—	75.3	—	—	69.8	—	—	—	70.9		
Algeria . . .	8) 17,847	6) 9,290	6) 19,841	192.1	89.9	—	—	—	—	—	—	—	—	—	—		
Cyrenaica . . . (w)	71,689	66,220	83,557	108.3	85.8	—	—	—	—	—	—	—	—	—	—		
Egypt . . .	33,950	35,019	31,952	96.9	106.3	—	—	—	—	—	—	—	—	—	—		
French Morocco .	...	1,589	1,280	...	...	—	—	—	e)	—	—	—	—	—	—	
Tunisia . . .	1,279	1,175	1,170	108.8	109.3	—	—	—	—	96	—	f)	—	—	95		
Total Africa . .	35,229	36,194	33,122	97.3	106.4	—	—	—	—	—	—	—	—	—	—		
GRAND TOTAL . . (m)	4,016	4,065	3,839	98.8	104.6	—	—	—	—	—	—	—	—	—	—		
(n)	52	22	20	233.3	257.4	—	—	—	—	—	—	—	—	—	—		
RYE	1,439	1,442	1,595	99.8	90.2	106	—	—	102	—	—	—	—	—	—		
Germany . . . (w)	3,163	3,018	2,885	104.8	109.6	—	—	—	—	—	—	—	—	—	—		
*Austria . . . (w)	1,816	1,903	1,952	95.5	93.1	—	—	—	—	—	—	—	—	—	—		
Belgium . . .	10,486	10,450	10,291	100.4	101.9	—	—	—	—	—	—	—	—	—	—		
Bulgaria . . .	10,450	10,291	100.4	101.9	—	—	—	—	—	—	—	—	—	—	—		
Spain . . .	184,297	178,664	191,072	103.2	96.5	—	—	—	—	—	—	—	—	—	—		
Estonia . . .	216,133	208,537	216,059	103.6	100.0	—	—	—	—	—	—	—	—	—	—		
Finland . . . (w)	...	...	...	...	...	—	—	—	—	—	—	—	—	—	—
France 1) . . (w)	525	544	561	96.6	93.6	2.6	—	—	2.5	—	—	2.7	—	—			
Greece . . .	429	476	570	90.2	75.3	1.9	—	—	1.9	—	—	2.7	—	—			
Italy . . .	1,401	1,451	1,512	96.6	92.7	2.1	—	—	—	—	—	2.3	—	—			
Latvia . . . (w)	...	364	358	...	...	—	—	2.8	—	—	—	—	—	—		
Lithuania . . .	628	575	532	103.6	118.0	—	—	—	—	—	—	—	—	—			
*Netherlands . (w)	1,660	1,682	1,807	98.7	91.9	72	—	—	—	—	—	69	—	—			
Poland . . .	185	204	162	90.6	114.1	—	—	—	—	—	—	—	—	—			
Romania . . .	647	654	608	99.0	106.5	—	—	—	—	—	—	—	—	—			
Syria and Lebanon	1,260	1,216	1,198	103.6	105.2	110	—	—	—	—	—	117	—	—			

COUNTRIES	AREA SOWN					CROP CONDITION (†)												
	1935	1934	Average 1929 to 1933	% 1935														
				1934 = 100	Aver. = 100	I-V-1935			I-IV-1935			I-V-1934						
						a)	b)	c)	a)	b)	c)	a)	b)	c)				
Thousand acres																		
Luxemburg . . .	19	19	19	100.0	101.4	2.2	—	—	—	1.9	—	—	—	—	—	2.5	—	—
*Netherlands . . .	450	445	445	101.0	99.2	74	—	—	—	—	—	—	—	—	—	74	—	—
Poland . . . (w)	14,100	13,963	14,211	101.0	99.2	—	3.0	—	—	—	—	—	—	—	—	3.4	—	—
Romania . . . (w)	951	886	872	107.4	109.1	—	—	—	e)	103	—	—	—	—	—	—	—	—
*Switzerland . . . (w)	35	35	47	100.1	95.5	105	—	—	—	—	—	—	—	—	—	—	97	—
Czechoslovakia . . . (w)	2,417	2,415	2,530	100.1	95.5	2.5	—	—	—	—	—	—	—	—	—	—	3.1	—
Yugoslavia . . . (s)	55	58	62	95.0	89.5	—	—	—	—	—	—	—	—	—	—	—	—	—
Yugoslavia . . . (w)	542	537	516	101.0	105.2	—	—	—	—	—	—	—	—	—	—	—	—	—
Total Europe . . .	35,489	35,660	36,241	99.5	97.9	—	—	—	—	—	—	—	—	—	—	—	—	—
U. S. S. R. . . (w)	58,519	60,975	64,626	96.0	90.5	—	—	—	—	—	—	—	—	—	—	—	—	—
Canada . . . (w)	5) 604	6) 587	6) 683	102.9	88.4	—	—	94	—	—	—	—	—	—	—	—	85	—
United States . . . (s)	7) 135	6) 148	6) 236	91.3	57.3	—	—	—	—	—	—	—	—	—	—	—	—	—
United States . . . (s)	5) 3,474	6) 1,937	6) 3,104	179.3	111.9	—	—	82.0	—	—	76.4	—	—	—	—	—	67.8	—
Total America . . .	4,213	2,672	4,023	157.6	104.7	—	—	—	—	—	—	—	—	—	—	—	—	—
GRAND TOTAL. (m)	39,702	38,332	40,264	103.6	98.6	—	—	—	—	—	—	—	—	—	—	—	—	—
GRAND TOTAL. (n)	98,221	99,307	104,890	98.9	93.6	—	—	—	—	—	—	—	—	—	—	—	—	—
BARLEY																		
Germany . . . (w)	845	780	554	108.3	152.5	2.5	—	—	—	2.5	—	—	—	—	—	2.8	—	—
*Austria . . . (w)	19	19	19	100.0	100.0	2.1	—	—	—	2.2	—	—	—	—	—	2.7	—	—
*Austria . . . (s)	397	397	397	100.0	100.0	2.0	—	—	—	—	—	—	—	—	—	2.3	—	—
Belgium . . . (w)	78	81	71	96.3	111.0	—	—	—	—	—	96	—	—	—	—	—	—	—
Bulgaria . . .	509	569	602	89.5	84.5	—	—	—	—	—	—	—	—	—	—	—	—	—
Spain . . .	4,536	4,502	4,629	100.8	98.0	—	—	—	—	—	—	—	—	—	—	—	—	—
France 1) . . . (w)	438	416	424	105.5	103.4	72	—	—	—	—	—	—	—	—	—	67	—	—
France 1) . . . (s)	1,370	1,457	1,413	94.0	97.0	72	—	—	—	—	—	—	—	—	—	71	—	—
Greece . . .	544	588	508	92.4	107.1	—	—	—	—	—	—	—	—	—	—	—	—	—
Luxemburg . . .	6	6	10	99.4	66.1	w) 2.2	—	—	w) 2.1	—	—	—	—	—	—	2.5	—	—
*Netherlands . . . (w)	23	23	19	100.0	100.0	—	—	—	s) 69	—	—	—	—	—	—	s) 73	—	—
Poland . . . (w)	77	77	131	100.3	59.3	—	—	2.7	—	—	—	—	—	—	—	3.1	—	—
Romania . . . (w)	227	199	231	114.0	98.3	—	—	—	e)	—	—	—	—	—	—	—	—	—
*Switzerland . . .	14	14	18	100.0	100.0	106	—	—	—	100	—	—	—	—	—	100	—	—
Czechoslovakia . . . (w)	14	11	17	123.2	84.2	—	—	—	—	—	—	—	—	—	—	—	—	—
Czechoslovakia . . . (s)	1,594	1,633	1,723	97.6	92.5	—	—	—	—	—	—	—	—	—	—	2.2	—	—
Yugoslavia . . . (w)	594	596	617	99.8	96.3	—	—	—	—	—	—	—	—	—	—	—	—	—
Total Europe . . .	10,832	10,915	10,930	99.3	99.1	—	—	—	—	—	—	—	—	—	—	—	—	—
Canada . . . (w)	7) 3,798	6) 3,612	6) 4,538	105.1	83.7	—	—	—	—	—	—	—	—	—	—	—	—	—
United States . . . (s)	8) 11,954	6) 7,144	6) 12,194	167.3	98.0	—	—	—	—	—	—	—	—	—	—	—	—	—
Total America . . .	15,752	10,756	16,732	146.5	94.1	—	—	—	—	—	—	—	—	—	—	—	—	—
*Japan . . .	1,860	2,088	2,088	112.2	83.9	—	—	—	—	e)	—	—	—	—	—	—	f)	—
Syria and Lebanon	680	611	810	111.2	83.9	—	—	—	—	—	96	—	—	—	—	—	—	95
Total Asia . . .	680	611	810	111.2	83.9	—	—	—	—	—	—	—	—	—	—	—	—	—
Algeria . . .	2,965	3,131	3,431	94.7	86.4	—	—	—	—	—	—	—	—	—	—	—	100	—
Cyrenaica . . . (w)	151	110	84	137.4	178.8	—	—	—	—	—	—	—	—	—	—	—	—	—
Egypt . . .	275	284	342	96.7	80.5	107	—	—	—	105	—	—	—	—	—	—	—	—
French Morocco . . .	3,954	3,844	3,344	102.9	118.2	—	—	—	—	—	—	—	—	—	—	—	—	—
Tunisia . . .	1,532	988	1,221	155.0	125.4	—	—	—	—	—	—	—	—	—	—	—	—	—
Total Africa . . .	8,877	8,357	8,422	106.2	105.4	—	—	—	—	—	—	—	—	—	—	—	—	—
GRAND TOTAL. . .	36,141	30,639	36,894	118.0	98.0	—	—	—	—	—	—	—	—	—	—	—	—	—

** St. 5 Incl.

COUNTRIES	AREA SOWN					CROP CONDITION (†)														
	1935	1934	Average 1929 to 1933	% 1935																
				1934 = 100	Aver. = 100	I-V-1935			I-IV-1935			I-V-1934								
								a)	b)	c)	a)	b)	c)	a)	b)	c)				
Thousand acres																				
OATS																				
*Austria . . . . .	...	743	759	...	...	2.1	—	—	—	—	—	—	—	—	—	2.4	—	—	—	—
Bulgaria	264	312	328	84.5	80.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Spain	1,619	1,877	1,917	86.3	84.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
France 1)	2,169	1,983	2,117	109.4	102.5	72	—	—	—	—	—	—	—	—	—	64	—	—	—	—
Greece	6,024	6,091	6,413	98.9	93.9	72	—	—	—	—	—	—	—	—	—	70	—	—	—	—
Luxemburg	358	353	322	101.5	111.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Czechoslovakia	67	67	72	100.0	92.7	2.3	—	—	—	2.1	—	—	—	—	—	2.5	—	—	—	—
Yugoslavia	1,958	1,976	2,050	99.3	95.5	...	...	...	—	—	—	—	—	—	—	2.3	—	—	—	—
	66	84	73	78.2	90.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total Europe	12,525	12,743	13,292	98.3	94.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Canada	7) 14,317	6) 13,731	6) 13,051	104.3	109.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
United States	8) 39,108	6) 30,395	6) 39,201	128.7	99.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Syria and Lebanon	30	32	29	93.4	104.4	...	...	...	—	—	—	—	—	97	—	—	—	—	95	—
Algeria	457	450	554	101.6	82.5	...	...	...	—	—	—	—	—	—	—	100	—	—	—	—
French Morocco	74	65	83	112.2	89.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tunisia	74	49	86	150.0	85.9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total Africa	605	564	723	107.0	83.9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
GRAND TOTAL	66,585	57,465	66,296	115.9	100.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

(†) See explanation according to the various systems, page 333. — *) Countries not included in the totals. — a) Above the average. — b) Average. — c) Below the average. — d) Very good. — e) Good. — f) Average. — g) Bad. — h) Very bad. — m) Not including U.S.S.R. — n) Including U. S. S. R. — w) Winter crop. — s) Spring crop. — r) Estimate of 1 May 1935. — 2) Almost half of this area represents resowings of winter wheat. — 3) Middle of the previous month. — 4) Including spelt. — 5) Area expected to be harvested. — 6) Area harvested. — 7) Area to be planted according to farmers' intentions on 1 May 1935. — 8) Area to be harvested, calculated on farmers' intentions on 1 March 1935. — 9) Third estimate. — 10) Average 1930 to 1933. — 11) Year 1933.

France: The second half of April was relatively cold for the time of year with rather wet weather in the north, east and Centre and rather dry weather in the west and south. There were complaints that, in some places, especially the north, growth was hindered. Some cases of rust which were, however, localised and not serious were notified together with some thin fields here and there and weak growth due to excessive moisture and the absence of heat as well as to the sparing use of nitrogenous fertilizers. The first decade of May, however, was favourable for cereals, weather having become warm in all parts and rain having fallen in the west and south.

The results of the enquiry into the crop situation on 1 May, which are set out in the general tables, reveal an appreciable decline in spring sowings, the total acreage of three spring cereals being 4.5 % smaller than that of last year and 8 % below the average. This result was foreseen in the case of wheat and the area of spring sowings is by far the smallest recorded. The total area under wheat seems to be a little larger than that of last year and the average. The difference, however, is due to the normal statistical error so that no precise *a priori* conclusions on the magnitude of this year's sowings can be made, but general information indicates that a slight increase in sowings has occurred. It appears to be rather appreciable in north where, according to the enquiry, amounting to 0.8 % of the area estimated on 1 May last year and 6.6 % of the average area of last year.

Crop condition shown on 1 May was distinctly better than the average of former years which was 69 in the case of wheat and 68 in the case of oats and barley. The condition of the wheat crop was appreciably inferior to the condition on 1 May 1933 which was placed at 75 and which resulted in the record crop of 1933.

If the average experience of former years is taken as a criterion, the crop condition of 75 of 1 May would result theoretically in a crop of approximately 331 million bushels (198 million cents). This, however, is a purely theoretical estimate for, in the first place, the result clearly depends on the conditions which will prevail between the present moment and the time of harvesting. In 1930, when crop condition on 1 May was 73, a harvest of only 228 million bushels (137 million cents) was obtained, while the 1934 crop which on 1 May showed the rather poor condition of 67, reached about 331 million bushels (198 million cents).

Moreover it must be borne in mind that in the north which cultivates only one fifth of the total wheat area but which produces a third of the outturn, the average crop condition was only 70, or somewhat inferior to the average condition of this region. Finally, it is well known that a fairly late winter like that experienced this year, with much rain and rather mild temperatures, affects the crop adversely though its influence may not be evident in the appearance of the crop in the spring. The comparatively limited use of nitrates this year cannot compensate entirely for this unfavourable factor, and to obtain a good crop very much sunshine and heat well spread over the period up to the harvest are necessary. To sum up, unless circumstances prove to be exceptionally favourable, the figure of 331 million bushels (198 million cents) indicated above would represent the highest crop possible this year.

Great Britain and Northern Ireland: Except in the south-west, where mild and showery conditions prevailed practically throughout the whole month, the weather in England and Wales during the first half of April was cold with ground frosts at night. These conditions were succeeded by stormy weather accompanied by heavy rain and a temperature rather lower than the normal for the time of year. Conditions in Scotland were somewhat similar with some heavy falls of snow in a few northern and north-eastern counties. The latter part of the month brought better conditions.

The growth of the autumn sown crops was retarded somewhat during April by the cold conditions and in many places they lost colour. As a result of the milder weather of the last part of the month crops were making rapid recovery everywhere. Winter sown wheat in Scotland maintained steady growth and as the crop was well forward for the season the plants suffered no serious damage from the recent rough weather conditions.

The germination of spring sown corn appears to be good though in some instances growth was slow as a result of the cold weather. During the last part of the month growth was rapid.

Except as regards the late sowings, the season as a whole in England and Wales was favourable for sowing spring corn. The land worked well and good seed beds were obtained except on heavy clay where a good tilth was difficult to obtain. In Scotland also, sowing operations were well advanced and they were, therefore, not seriously retarded by the bad weather of the early part of April.

Crop condition of the wheat, barley and oat crops in Scotland on 1 May was 105, 100 and 100 respectively.

Greece: Rain fell in Thrace, Macedonia and Thessaly and was very favourable for crops. Crop condition of cereals was good in the middle of April and the crop is expected to be greater than that of 1934.

According to the most recent and final estimate, area sown to meslin in 1934 was about 146,300 acres against 136,700 in 1933 and 116,800 on the average of the five years ending 1932; percentages 107.0 and 125.3. The corresponding production is estimated as about 684,500 centals (1,180,000 bushels) against 1,033,000 (1,782,000) and 550,500 (949,000); percentages 66.2 and 124.4.

Hungary: During the week ending 30 April weather was characterised by normal temperatures, but during the first week of May there were exceptionally severe night frosts and a serious shortage of rain in most of the country. During this week night temperatures were often 22° to 23° F.

The growth of the cereal crops was delayed by the cold weather. The frosts at the beginning of May resulted in some places in damage the extent of which has not yet been calculated. In some places the fields affected have been re-tilled. Apart from the delay, the cereals are thick and vigorous.

Italy: During the first half of April the growth of wheat was somewhat hindered by the drought. In some provinces frost and cold winds caused some damage. The shortage of soil moisture is making field work difficult. The second half of the month was characterised by rather low temperatures and more or less plentiful rains which were on the whole favourable for the cereal crops, growth of which, however, was backward at the end of the month. The drought continued in some parts of Central and South Italy.

Latvia: During the first half of April there were normal variations in temperature with much rainfall. During the second half after some warm days the temperature again began to descend and there was little rain. According to the reports of agricultural correspondents, crop condition of winter wheat on 1 May was average in 46.7 % of the cases, above average in 39.4 % and below average in 13.9 %. Corresponding figures for winter rye were 39.1 %, 50.7 % and 10.2 %.

Lithuania: April was dry and cold, especially in the first half. Temperature rose only in the third decade but it was marked by appreciable variations. There was hoarfrost and snow fell in fair quantities in certain areas. Weather conditions were unfavourable for growth which made no progress.

Weather conditions were favourable for spring seeding. Work began in the second half of April but was impeded by the cold and only a small proportion of the sowings could be done.

Luxemburg: April was characterised by cold and wet weather. All crops are backward owing to the continuous rains and cold.

The preparatory work for the spring crops made slow progress and was still unfinished on 1 May.

The area sown to mixed grains in 1935 is 6,900 acres, the same area as last year's while the average of the previous five years was 10,300 acres. Percentages: 100.0 % and 66.9 %.

Crop condition on 1 May in the system of the country was 2.2.

Netherlands: Weather conditions in October and November of last year were favourable for the sowing of winter cereals which have grown very well. The winter was mild and without serious frosts and was favourable to the subsequent growth of the crops. Spring work proceeded very regularly.

The early March frosts hindered the growth of cereals, but, owing to the luxuriant condition of cereals at this time, the effect of the frosts was not in the least unfavourable.

Crop condition of winter wheat at the middle of April varied from good to very good though there were local instances of rot in Zeeland. Weeds were generally widespread and were encouraged by the wet which made their removal difficult. The growth of rye was also satisfactory. In several places, particularly in Limburg and Overijssel, nematodes were recorded.

The condition of winter barley is good but in some places it was tending to yellow, owing to the wet soil, and the plants were too thick.

Poland: Crop condition of winter cereals on 15 April, according to the Central Statistical Office, did not show changes from the estimates of the situation on 15 March.

Insufficient warmth and sunshine for the vegetative needs of the plants between 15 March and 15 April was notified in 70 % of the replies of correspondents.

The cold and the excessive moisture in the fields were unfavourable influences on the growth of winter crops and on the sowing of spring cereals. 51 % of the reporters state that the growth of winter crops has suffered a setback. According to 52 % of the reports, spring sowings were made in unfavourable circumstances while, in 14 % of the replies it was stated that sowings had not begun.

In a number of places in the provinces of Poznan and Warsaw, it was necessary to re-cultivate fields sown to winter wheat and, more particularly, to rye, which were attacked by Hesse fly and brown rust in the autumn. *Fusarium* damage also occurred in the provinces of Poznan and Warsaw.

Warm, dry and windy weather prevailed in the second half of April. At the end of the month there were rains, accompanied at times by hail; temperature began to fall, and for three days, from 30 April to 2 May, there were rather heavy falls of snow in the north and central parts of the country. On 2 and 3 May night temperatures were very low (18° F in Warsaw and 27° F in Tarnopol). In the following days weather was clear and temperature rose again.

Rye and wheat underwent some frost damage. On the whole, the condition of winter wheat is worse than that of rye. The growth of spring cereals is late and in the central and western areas of the country it is rather weak.

According to the report of the Central Statistical Office, crop conditions of winter cereals on 5 May was worse than it was on 15 April.

Crop Condition of Winter Cereals.

	Wheat	Rye	Barley
5 May 1935	3.0	3.0	2.7
15 April "	3.2	3.3	2.9
5 May 1934	3.4	3.4	3.1
15 April "	3.3	3.2	3.1

Portugal: Crops suffered much damage from the persistent drought of April. Wheat which, after the rains of the end of the month, had a good appearance and promised a plentiful crop, even better perhaps than that of last year, is now in bad condition. Rain was needed urgently in the first days of May. Owing to the cold and the lack of moisture, rye did not look as good as last year's crop at the same period, particularly on hill soils which are naturally dry.

Romania: The second half of April was marked by very changeable weather conditions. Rainfall was generally plentiful and temperature exceptionally low. The soil was soaked in all parts, including the north of Bessarabia, Moldavia and the provinces where drought had prevailed in the first two decades of April.

Winter cereals had a good appearance. Early sown winter wheat suffered particularly from frosts. Field-mice caused considerable damage in Bukovine and in the three provinces of Transylvania. The cold, wet weather of the beginning of May may encourage the spread of rust but it is not yet evident.

Spring cereal sowings proceeded in favourable conditions. The area under spring wheat this year will be greater than that of last by about 25 to 35 %. The acreage of spring barley, on the other hand, will be smaller than that of last year by about 10 %, while the area under oats will be about equal to last year's.

The spring cereals, sowings of which were somewhat late, have sprouted well and are good in appearance. At the beginning of May, however, growth was delayed by the low temperatures.

Switzerland: In April weather was predominantly cool and wet. Rainfall was very plentiful in some parts and there were falls of snow in the higher altitudes. Sprouting is consequently late. Autumn cereals have a good appearance everywhere and stalks are good. Autumn wheat, spelt and autumn rye show vigorous growth, and in parts are too exuberant but on the whole are a little backward owing to the cool temperatures. The bad weather has hindered spring seeding somewhat.

The sowings are sprouting and show good growth but warmer weather is desirable.

Crop condition of spelt at 1 May 1935 was 103 according to the system of the Institute; the corresponding figure for 1 April 1935 was 104 and that for 1 May 1934, 97. The meslin figures for these dates were 107, 104 and 98.

Czechoslovakia: Exceptionally warm weather marked last autumn and the beginning of the winter. Real winter weather did not set in until the beginning of January. During January and February weather showed great variation. On the whole, the winter was mild.

At the beginning of March temperature dropped considerably and there were heavy falls of snow. During the second and third decade of the month weather was dry and mild. At the end of March temperature fell again, descending even to 5 to 7° C below normal. Weather during the first two decades of April was very changeable and there was much rainfall.

Weather began to clear generally only about 20 April as a result of a belt of high pressure extending over Central Europe. Temperature rose in some places to 68-70° F. The nights, however, were comparatively cold and sometimes accompanied by frosts. Several storms occurred at the end of the month. Rainfall was heavy on 28 April. Weather became cold once again.

Winter cereals wintered well and are growing satisfactorily. According to reports from several areas, rye in particular is affected by *Fusarium nivale* and it has also suffered from the spring frosts but the damage is slight. Sowing of spring cereals began early, that is, in the last decade of March, but work was held up by the cold and wet weather of April with the result that in several areas, particularly, in the higher districts, work could not be resumed before the end of April. In several places the work has not even begun. The early sown spring cereals are sprouting evenly and growing well.

The area sown this year to meslin is 16,900 acres, 0.7 % below that of last year and 17.5 % below the quinquennial mean.

Yugoslavia: The rather changeable, sunny, dry and warm weather of April was very favourable to the winter cereal sowings and the preparatory work for spring planting.

The winter cereals had a very good appearance at the end of the month and promised a good crop. Sowing of spring cereals (barley and oats) began in the south.

The setback caused by night frosts on 3 and 4 May, particularly in the Danube *Banovine* affected vineyards, orchards and vegetables rather than the winter cereal crops.

According to the latest estimate, the area sown to mixed grains in the winter of 1934-35 was about 127,800 acres as against 121,800 in 1933-34. Percentage: 104.9. The spelt area is estimated at 20,900 acres against 19,000 acres. Percentage: 110.1 %.

U. S. S. R.: As the following table shows, sowings are being made more quickly this year than in former years.

Area sown to all spring crops.

(Thousands of acres)

Date	1935	% of Plan	1934	% of Plan	1933	% of Plan
20 April	77,405	34.5	53,151	23.1	34,227	14.6
25 April	102,857	45.8	68,430	30.0	46,138	19.7
30 April	123,748	55.1	89,525	39.0	62,568	26.6
5 May	145,446	64.8	115,400	50.2	83,807	35.7
10 May	169,808	75.6	140,719	61.3	105,016	44.7

Of the total area of 169,808,000 acres, sown up to 10 May, collective farms have sown 138,799,000 acres, that is, 82.4 % of the Plan, State farms 19,861,000 acres, or 69.8 % of the Plan, and individual farms 11,150,000 acres, or 40.4 % of the Plan.

Cold weather prevailed during the second half of April, especially in the north-west of the country. In the second decade of the month, a cold wave coming from the north extended far to the southern part of the European territory of the Union, causing a drop in night temperatures below freezing point not only in the central areas but also in the south. The average temperatures of the third decade of April were nearly everywhere below the mean of a long series of years. The maximum day temperature was not more than 64 to 73° F as for as the North Caucasus. At the beginning of the first decade of May there was a further fall in temperature, particularly in the north-west of the European territory. Later in the middle of the decade, temperature rose again.

During the second half of April and the first decade of May there was frequent and occasionally plentiful rain in the south (North Caucasus, Ukraina) and in the central and north-western part, while in the south-east of the European territory (Transvolga and Ural regions) and in the south of Asiatic Russia weather was rather dry and warm and rainfall was rather scanty.

The general fall in temperature during the third decade of April and at the beginning of May delayed the growth of crops, but it helped to bring about a more vigorous development of the roots, and thus makes a good crop more likely. Another favourable element of this spring was the adequate supplies of soil moisture over a large proportion of the country.

Crop conditions of winter and spring cereals at the beginning of May was thought to be entirely satisfactory in most regions of the country. In some parts of the south

(North Caucasus, Ukraina) an excessively forward development of cereals, which may possibly result in lodging, occurred. In the same regions also there were complaints of a widespread growth of weeds.

Early in May the area sown to wheat exceeded 75% of the Plan, while last year this proportion was reached only on 13 May. Barley sowings are nearly finished.

Argentina: Preparatory work for the sowing of cereals proceeded rather slowly in April owing to the drought and the high winds particularly in the south of the provinces of Buenos Aires and Santa Fé. In the latter a tendency to reduce the wheat area in favour of flax was noticeable. Field work was hindered in some parts of the province of Córdoba by the drought. In the province of Entre Rios also work was behindhand at the end of April. Weather conditions in La Pampa have not been favourable for field work which is backward everywhere. In the province of Santiago del Estero, on the other hand, field work, as a result of the reserves of moisture, was done in excellent conditions.

The Ministry of Agriculture has proceeded with the classification of recommended varieties of wheat and of those kinds which are undesirable on account of soil conditions and the requirements of the export market.

The recommended varieties have been classed in three groups: *corte*, *relleno* and *blancura*, the first two consisting of varieties preferred by European markets and the third of those suitable for local consumption and export to Brazil. The *corte* types are declared to be excellent for export, chiefly of use as correctives including the following varieties: Guatraché M. A., Lin Cael M. A., Kanred and Linmarq. The *relleno* types are of good quality for export, of value partly as correctives and suitable for bread-making. They form a balanced type of grain and included Acero 38 M. A., La Prevision 25, Klein 33, Vencedor, Sin Rival and Klein 32. The varieties in the third group are: Triunfo, Sola 50, San Martin, General Urquiza and Klein 40.

The Syndical Chamber of Cereals of the Commerce Exchange of Buenos Aires has decided on the following specific weights for the first official types of wheat of the new crop: Buenos Aires type No. 1, 80,220 kg. per hectolitre; Buenos Aires type No. 2, 78,090 kg.; Bahia Blanca type No. 1, 80,735 kg.; Bahia Blanca No. 2, 78,405 kg.; Entre Rios type No. 2, 78,970 kg. A base of 80 kilogrammes specific weight has been fixed for official quotation of all kinds. Entre Rios No. 2 is placed for quotation in the same category as Buenos Aires No. 2.

(Telegram of 22 May): Field work and wheat sowings are behindhand owing to the hard soil.

Canada: The spring sowings are very late everywhere except in Ontario on account of the late spring. Wet and cold weather prevailed during recent weeks so that spring work was delayed. Very little seeding was done in the Prairie Provinces in April. Last year at the beginning of May sowings were half finished in Manitoba and Alberta while in Saskatchewan a third of the work had been done. Work was further delayed by storms on 1st and 8th May, but moisture conditions improved decidedly.

The winter-killed areas of winter wheat sown in the autumn of 1934 are respectively 126,000 acres and 27,000 acres.

According to the enquiry into farmers' sowing intentions as at 1 May, the area to be sown to mixed grains this year is about 1,179,000 acres compared with a harvested area last year of 1,159,200 acres and an average in the five years 1929 to 1933 of 1,173,400 acres. Percentages: 101.7 and 100.5.

United States (Telegram of 2 May): Weather was very warm in the eastern half of the country but unseasonably cold in the western half. Conditions in the east of the Great Plains were generally satisfactory though the season was late. Rain and snow were helpful in the northern Great Plains, particularly to spring grain crops, but the drought area in the south-west centring in Kansas was unrelieved.

(Telegram of 9 May): Weather during the previous week was very wet and cold everywhere except in the south-eastern States and along the Pacific Coast and growth of crops, was retarded and field work delayed. Moisture was then ample everywhere in the east of the Great Plains but the drought in the south-western area persisted.

(Telegram of 16 May): Cool weather prevailed in the northern States and excessive moisture from the Missouri River eastwards caused rank growth in the wheat crops. There were beneficial rains in the Great Plains, Kansas and Nebraska, but the light rains which fell in the drought area came too late to save the crops.

The winter wheat area abandoned this year is estimated at 13,839,000 acres, or 31 % of the area sown in the autumn.

On the basis of the area and crop condition on 1 May (see Table) the outturn of winter wheat is expected to amount to 431,637,000 bushels (258,982,000 centsals) showing a fall of 3,862,000 bushels (2,317,000 centsals) from the estimate made a month ago on the basis of crop condition on 1 April. This compares with a production of 405,034,000 bushels (243,020,000 centsals) in 1934 and an average production of 572,861,000 bushels (343,717,000) in the five years 1929-33. Percentages: 106.6 and 75.3.

There is a considerable winter loss also in the case of rye, amounting in this case to 2,223,000 acres, or 39 % of the sown area. The area remaining for harvest, however, is still nearly twice as large as that of last year, and, as a result of this great expansion, the harvest this year, on the basis of the crop condition on 1 May, is expected to amount to 40,356,000 bushels (22,599,000 centsals) as against 16,040,000 bushels (8,982,000 centsals) in 1934 and an average of 35,167,000 bushels (19,694,000 centsals) in the five-year period 1929-33. Percentages: 251.6 and 114.8.

India: According to the fourth estimate of the Punjab wheat crop issued in the middle of May, the outturn in 1935 is estimated to amount to 133,580,000 bushels (80,150,000 centsals) compared with 122,600,000 bushels (73,560,000 centsals) last year and an average in the five years 1929-1933 of 128,140,000 bushels (76,880,000 centsals) Percentages: 109.0 and 104.2.

Japan: Assisted by the favourable weather, the winter wheat and barley crops progressed normally in April.

Palestine: Weather conditions during March were favourable. Cereals wintered excellently and no damage is notified. Crops in Southern Palestine need more rain. Spring sowings are progressing in excellent conditions.

Syria and Lebanon: Weather in the main continued to be favourable to cereals. Rainfall was abundant in the winter and temperatures were normal and except in the mountains and in the Jebel-Druze there was practically no snow. Crops wintered in very good conditions and no frosts were recorded. No damage was notified except in the lower plains of Lebanon and Latakia, where moisture was excessive but where, however, the new early varieties of wheat are in very good condition, and, as a result of the fine weather of March all crops have recovered. Growth is excellent in the mountains and fairly good in the plains. Spring sowings were completed generally in good conditions.

Algeria: The weather conditions during April varied a great deal from district to district as in the previous months. A severe drought prevailed in Oran throughout the month broken only by a few showers at the end. The native crops in several districts are lost and the losses are spreading westwards. The wheat crop in European settlements was earing with great difficulty and that on light soils is half lost in many cases. Early sown soft wheat and the early varieties succeeded in ripening but in unfavourable conditions while the yield of late crops will be very low. Barley has a mediocre appearance and the oat crops are drying. The crops are satisfactory, thanks to the rains of the end of April, only in the high plateau districts and in the plain of Sidi bel Abbès. In Alger weather was warm and dry up to the last days of the month when good rains were general. These have considerably benefited the crops which were suffering from drought to such an extent that in some places the loss was calculated to amount to 50 % of the yield originally anticipated. The beginning of the month was rather cold in Constantine but temperature rose quickly and rain fell on two occasions, particularly at the end of the month. The rains made possible a good formation of grain in the barley and soft wheat crops. The hard wheat crop, which was about to ear, was also likely to benefit from these conditions. On the whole, the early sown crops promise very satisfactory yields but the outcome of the later and native crops is more uncertain. The declaration of sowings made in accordance with the laws in force indicate a decrease of 13.7 % in the soft wheat crop and an increase of 6.2 % in hard wheat, which together would result in an increase in wheat sowings in this *département* of 4.3 %.

In Algeria as a whole the condition of crops worsened during April.

Cyrenaica: Temperatures were normal in April and weather was characterised by the predominance of the *ghibli*. Rainfall was recorded in varying quantities in the first decade of the month. Crop condition was thought to be average.

Egypt: Harvesting of early wheat cultivations is over in Upper Egypt where it was begun during the early days of April. Elsewhere, harvesting began in most regions during the second half of April.

The crop seems at present to be 6 % above the average. This is due to the fact that the weather conditions were highly favourable during this month, notwithstanding the probably deleterious effects of the unusual rise in the temperature, during last week, on certain late cultivations where the grains have not reached complete maturity. Harvesting of barley is over in Upper Egypt and general elsewhere. The yield is expected to be about 7 % above the average.

French Morocco: The drought, the damage resulting from which in the middle of April has already been indicated, continued during the second half of the month. Some light showers fell at the end of the month in the north coastal areas (Casablanca and Rabat) while rainfall was a little heavier in the Centre (Meknès, Fez and Taza) but the beneficial effect of the rains was limited. On the other hand, the warm south and east winds have accentuated the effects of the drought in the territory as a whole.

The condition of cereals as a whole was much below normal at the end of April with, however, considerable variations depending on the care with which the work of preparation and cultivation was done. Some of the native crops and, in some cases, even those of the European settlers, were affected to such an extent that they were cut green and fed off to animals. Cereals are ripening and an improvement is now hardly possible. The barley harvest has begun on the coast. It is expected

that harvesting of soft wheats, ripening of which is well forward, will begin about 15 May. Hard wheats were in the critical earing stage and a very poor yield was expected to result from the very unfavourable conditions.

The outlook at the end of April indicated a crop equal at best to half that of last year in the case of the three chief cereals, hard wheat, soft wheat and barley. The pessimistic forecasts made in the middle of April are thus confirmed.

Tunisia: Temperatures were above normal in the first decade of April and normal during the remainder of the month. Rainfall was slight in the north, almost nil in the central and southern parts. There were strong north-west winds and three days of sirocco. In the Bizerta area, the crops, which benefited greatly from the rains of the end of April after being adversely affected by winds and drought, were good or average according to district, but an abnormal development of black rust in the soft wheat crop is notified in some localities. In the Tunis and Kef areas, the harvest shows wide variations, being good, average or mediocre according to the conditions and circumstances of sowing, and rust appeared on early soft wheat. In the south (Suza and Sfax districts), the barley harvest, which began at the end of April in the far south, is good and frequently very good, but the wheat crops are suffering from drought, especially the later crops, which will give poor yields, particularly in the Kairman area where rust has caused some damage.

These indications confirm the expectation outlined last month of a very good barley crop, but it is probable that, as the hard wheat crop is somewhat below the average, that of soft wheat will also be unsatisfactory.

MAIZE

Hungary: By the end of the first week of May, maize sowing had been finished in the greater part of the country and the crop had sprouted uniformly. The frosts of the early part of May had caused damage in some places and the damaged fields which are not, however, of great extent, are being re-sown.

Romania: The cold weather delayed maize sowings. About one half only of the area intended for the crop had been sown by the beginning of May.

Czechoslovakia: The area sown this year to maize grown alone is estimated at about 231,400 acres against 221,900 acres in 1934, an increase of 4.3 %.

Argentina: According to the monthly report, dated 24 April, of the Ministry of Agriculture, maize harvesting was in full swing almost everywhere during April. In the east of the Province of Buenos Aires, however, the variation of the state of maturity made it advisable to proceed slowly with the work of harvesting. The late maize in this area is considered lost for the most part. The harvest had not begun in the south-east owing to the late ripening. In several *departamentos* there are substantial acreages which have yielded no crop but the early maize in the central parts of the province produced good yields. The maize crop in Bahia Blanca will be practically nil as the crops which were in good condition underwent frost damage. Harvesting was proceeding in the west of the Province of Buenos Aires and, on the whole, good yields were obtained. In the north of this province yields and quality are above normal. In Santa Fé the dry weather of April was favourable for harvesting which was nearly completed in the north at the end of last month and which gave good yields.

of early crops. In the southern part of the province harvesting and threshing were in full swing, yields being high. The quality and yield of the late varieties had improved during April. In Córdoba harvesting was proceeding regularly everywhere. In the north and north-east, the crops surpass expectations, particularly in the *departamentos*

Maize.

COUNTRIES	AREA					PRODUCTION							
	1934	1933	Aver. 1928 to 1932	% 1934 and 1934/35		1934	1933	Average 1928 to 1932	1934	1933	Average 1928 to 1932	% 1934 and 1934/35	
	1934/1935	1933/1934	1928/1929 to 1932/1933	1933/1934	Average 1933/1934 = 100	1934/35	1933/34	1928/29 to 1932/33	1934/35	1933/34	1928/29 to 1932/33	1933/1934	Average 1933/1934 = 100
	1,000 acres					1,000 centals			1,000 bushels of 56 lb.				
Austria . .	160	159	148	101.0	108.1	3,303	3,011	2,667	5,897	5,377	4,763	109.7	123.8
Bulgaria . .	1,658	1,796	1,757	92.3	94.3	18,067	20,967	17,660	32,262	37,441	31,536	86.2	102.3
Spain . . .	1,072	1,067	1,045	100.5	102.5	17,368	14,559	14,378	31,015	25,998	25,674	119.3	120.8
France . . .	823	832	843	98.8	97.5	11,452	9,589	10,516	20,449	17,123	18,778	119.4	108.9
Greece . . .	585	647	556	90.5	105.3	5,099	6,026	3,755	9,106	10,760	6,706	84.6	135.8
Hungary . .	2,777	2,816	2,726	98.6	101.9	46,256	39,889	37,085	82,600	71,230	66,223	116.0	124.7
Italy. ^(s)	3,271	3,190	3,391	102.5	96.5	64,330	52,549	50,695	114,874	93,837	90,528	122.4	126.9
Poland . . .	384	346	252	111.1	152.3	6,059	4,564	2,793	10,820	8,151	4,880	132.7	221.7
Romania . .	223	225	231	99.0	96.3	1,670	1,232	2,030	2,982	2,200	3,732	135.5	79.9
Switzerland .	12,368	11,928	11,470	103.7	107.8	106,840	100,408	113,401	190,786	179,301	202,502	106.4	94.2
Czechoslov. ¹⁾	2	2	3	81.3	74.0	55	63	71	99	113	126	87.2	78.4
Yugoslavia .	359	316	351	113.4	102.3	5,447	3,370	5,466	9,728	6,018	9,760	161.6	99.7
Total Europe	6,578	6,272	5,761	104.9	114.2	113,631	78,883	76,843	202,912	140,863	137,220	144.0	147.9
*U. S. S. R. .	...	9,884	9,588	...	...	84,658	105,822	75,663	151,175	188,969	135,113	80.0	111.9
Canada . . .	161	137	143	117.9	112.7	3,807	2,830	2,997	6,798	5,054	5,351	134.5	127.0
United States	87,486	103,260	102,768	84.7	85.1	773,202	1,316,928	1,434,802	1,380,718	2,351,658	2,562,147	58.7	53.9
Mexico . . .	7,299	7,904	7,746	92.3	94.2	37,508	42,414	40,259	66,979	75,740	71,891	88.4	93.2
Cambodia . .	741	297	92	250.0	802.4	9,921	3,748	1,079	17,716	6,693	1,927	264.7	919.2
Chosen . . .	292	276	263	105.6	110.9	1,311	1,974	1,832	2,341	3,525	3,272	66.4	71.5
Syria & Leb. .	61	67	76	90.9	80.0	646	573	837	1,154	1,024	1,494	112.7	77.2
Turkey . . .	778	942	884	82.6	88.0	7,108	12,502	10,707	12,692	22,324	19,121	56.9	66.4
Algeria . . .	19	18	23	107.8	82.9	158	102	146	282	183	260	154.4	108.4
Egypt . . .	1,632	1,638	2,036	99.6	80.1	34,653	32,536	41,658	61,880	58,101	74,389	106.5	83.2
Eritrea . . .	11	27	21	40.9	52.3	79	220	177	142	394	317	36.0	44.7
Kenya ³⁾ . .	123	113	193	109.0	63.8	1,939	1,494	2,604	3,462	2,667	4,650	129.8	74.5
French Mo- rocco . . .	986	887	714	111.0	138.1	5,425	3,096	3,171	9,688	5,528	5,663	175.3	171.1
Tunisia ⁴⁾ .	62	37	44	166.7	141.2	154	132	130	276	236	232	116.7	118.6
*Argentina ⁵⁾	17,372	16,097	13,714	107.9	126.7	...	130,095	170,217	...	232,314	303,960	...	...
*Un. of S. Afr.	...	3) 6,506	3) 5,847	...	...	37,956	47,802	6) 33,784	67,779	85,361	6) 60,328	79.4	112.3
TOTALS . . .	129,911	145,199	143,537	89.5	90.5	1,275,488	1,753,659	1,877,759	2,277,658	3,131,539	3,353,142	72.7	67.9

* Countries not included in the totals. — s) Spring crop (*maggengo*). — t) Summer crop (*cinquantino*). — 1) Of which 218,000 acres unmixed crop and 141,000 acres mixed crop. — 2) Of which 3,538,000 centals 6,319,000 bushels) from unmixed crop and 1,909,000 centals (3,409,000 bushels) from mixed crop. — 3) European crop. — 4) Maize and sorghum. — 5) Area sown. — 6) Figures for the average not yet revised according to the 1933-34 census results.

of Santa Maria and Rio Segundo. In the eastern and south-western parts of the province, cropping, which had become general at the beginning of April continued actively during the month and threshing had also begun; yields were better than average. The quality of the crop is excellent; the grain has ripened fully and is of good colour. There

was an active movement of the crop towards the collecting centres in the most important producing areas. In the Province of Entre Rios a crop better than the average was expected, in spite of grasshopper damage and the late ripening of bitter varieties.

In the Province of Santiago del Estero, harvesting of early varieties was hindered by the bad weather which has definitely injured the crop. Yields were generally satisfactory. On the whole, a crop more or less equal to last year's was expected. Late varieties benefited from the rains of April and crop condition of these was normal.

The drought in La Pampa caused appreciable damage and a poor crop was expected.

(Telegram of 22 May): Maize harvesting was continuing in very good conditions.

French Morocco: At the end of April the effects of drought were to be seen in the sprouting and growth of unirrigated maize and sorghum crops. They would improve much, however, if rain fell.

Tanganyika Territory: The estimated maize crop available for sale this season is 236,600 centals (422,400 bushels of 56 lb).

Tunisia: Spring sowings this year were fairly considerable, on the whole. The crops suffered owing to the drought, but the late sowings benefited greatly from the rains of 23 and 24 April.

RICE

Argentina: Harvesting of maize was proceeding in March in the Provinces of Tucuman, Corrientes and in the National Territory of Divisiones. The late varieties in the province of Tucuman promised better yields than those of the earlier varieties. Growth of weeds was reported from the Province of Jujuy. A good crop was expected in the Province of Salta.

British Guiana: It was reported in March that the rice spring crop was expected to be much bigger than that of last year.

Taiwan: Transplanting of first crop rice is completed. Growth is proceeding normally.

British Malaya: February and March were characterised by hot and dry weather during the first two or three weeks and by showery weather in the latter part of the month. Generally speaking, the weather was fairly normal and the rainfall about or slightly below the average. The padi harvest progressed rapidly and at the end of March it was nearing completion in all the more important padi areas. Crop prospects were good in Province Wellesley, Upper Perak, Western and Central Pahang and the inland areas of Malacca, but in Kedah it was confirmed that the crop would probably be considerably below that of last season owing to adverse weather conditions, and in some of the coastal areas of Malacca late planting and dry weather were expected to cause an almost complete loss. In Negri Sembilan outlook was fair, and in Krian the crop appeared to be about the same as the previous season in quantity but inferior in quality, the grain being light, probably owing to the effects of the drought in December. In Kelantan prospects were very good.

At the end of March the preparation of land and the planting of nurseries for the coming season had already been commenced in various districts.

Egypt: Preparation of the soil for summer rice cultivation is in full swing and in certain areas, sowing was actually begun during the last week of April.

Tanganyika Territory: 129,500 centals (287,800 bushels of 45 lb.) of rice and 107,100 (237,900) of paddy are estimated as being available for sale this season.

POTATOES

Austria: Potato planting had been completed in only a few places at the end of April. Early potatoes are beginning to sprout.

France: Planting proceeded in fairly good conditions. Germination and growth of the tubers, though hindered by the cold of the second half of April, were satisfactory on 10 May.

Great Britain and Northern Ireland: The season on the whole was favourable for planting, although in some areas the preparation of the ground was hindered by wet. In many parts of the country planting was completed by the end of the month but in other areas the work is somewhat behindhand. Early potatoes are looking well but are not so forward as usual for the time of year.

Hungary: Early potatoes had sprouted at the end of the first week of May. Foliage was injured by frost but it is thought that the tubers will recover with good weather.

Poland: The proportion of potatoes which have rotted in silos and clamps during the winter for the whole country was 10 %, of the total harvested, while last year it was 6 %.

Portugal: Potato planting has begun. An increase on last year, amounting in some cases to more than 20 %, is reported.

Czechoslovakia: Potato planting had not been finished by 1 May even in the low-land areas while in the majority of the high districts it had not begun.

However, the following estimates are made of the area which will probably be devoted to potatoes:

	1935	1934	Average 1929-1933	% 1935 1934 = 100	% 1935 Average = 100
		Acres			
Early varieties	100,600	97,100	86,900	103.7	115.8
Main crop.	1,759,800	1,752,800	1,701,200	100.4	103.4
<i>Total</i>	<u>1,860,400</u>	<u>1,849,900</u>	<u>1,788,100</u>	<u>100.6</u>	<u>104.0</u>

Canada: According to the enquiry into farmers' intentions, as at 1 May, the acreage to be planted to potatoes this year will be about 525,000 acres, compared with a harvested area of 569,200 acres in 1934 and an average of 551,200 acres in the five years 1929-33. Percentages: 92.2 and 95.2.

Algeria: Production of the non-irrigated crop was hardly satisfactory in Alger. Growth in Constantine was normal and plantings cover as large an area as last year.

Southern Rhodesia: According to the most recent estimate, the area cultivated to potatoes in 1933-34 was about 1,800 acres against 1,500 in 1932-33 and 1,700 on the average of the five years ending 1931-32. Percentages 118.2 and 104.9. The corresponding production is estimated at about 96,900 centals (161,400 bushels) against 66,000 (109,900) and 70,400 (117,400). Percentages 146.8 and 137.5.

SUGAR

Unlike March, when conditions were distinctly springlike, April was characterised by wet, cold and cloudy weather and work on the sugar-beet crops was made difficult, sowings being delayed particularly when compared with last

Acreeage of sugar-beet.

COUNTRIES	1935 *)	1934	Average 1929 to 1933	% 1935	
				1934 = 100	Average = 100
	acres				
Germany 1)	893,823	858,869	845,750	104	106
Austria	106,000	122,600	97,685	87	109
Belgium	124,000	132,366	134,551	93	92
Bulgaria	16,800	4,400	38,818	378	43
Denmark	104,000	102,300	89,085	101	117
Spain	200,000	250,000	213,922	80	92
Irish Free State	55,000	45,581	12,239	119	444
Finland	7,200	7,140	4,873	100	147
France	605,000	678,830	668,939	89	91
Great Britain	375,000	403,884	287,010	93	131
Hungary	91,000	93,190	144,942	98	63
Italy	220,000	220,794	252,269	100	87
Latvia	35,000	35,600	15,000	97	233
Lithuania	15,000	10,000	7,846	150	189
Netherlands	99,000	103,586	117,463	95	84
Poland	270,000	276,760	389,276	98	70
Romania	89,000	91,813	87,294	95	102
Sweden	122,300	125,077	94,460	98	129
Switzerland	3,700	3,830	3,277	97	113
Czechoslovakia	389,207	392,911	468,437	99	83
Yugoslavia	67,000	63,808	112,346	105	59
Total Europe a) . . .	3,888,030	4,023,339	4,085,482	97	95
U. S. S. R.	3,000,000	2,906,000	2,941,783	102	101
Total Europe b) . . .	6,888,030	6,929,339	7,027,265	99	98
Canada . . . . .	...	52,000	46,953	...	...
United States	985,486	789,000	784,616	—	—
Total North America . . .	...	841,000	831,569	...	...
Japan . . . . .	...	24,750	22,722	...	...
Turkey	57,272	76,735	31,763	75	180
Total Asia . . .	...	101,485	54,485	...	...
GENERAL TOTALS . . . {	a) ...	4,965,824	4,971,536	...	...
	b) ...	7,871,824	7,913,319	...	...

*) Approximate data. — a) Not including U. S. S. R. — b) Including U. S. S. R. — 1) Area of sugar-beet delivered to factories.

year when the work has greatly assisted by the weather. By the middle of May, however, sowings had been finished almost everywhere.

Weather in Germany was rather unfavourable with winds and heavy falls of snow which delayed sowings. In Silesia there was much precipitation and weather was cold and windy up to the end of April. Weather improved later. The first sowings have already sprouted. Beet sowings were also held up in Pomerania owing to the bad weather which lasted up to the end of the first week of May and which allowed only half the area intended for sugar-beet to be sown up to this time. Germination has begun in some places and the young shoots have not suffered frost damage up to the present. The weather in Mecklenburg was very changeable with snow and severe night frosts followed by warm, sunny days. The cold was very severe but there was no serious damage on the whole. The early sowings sprouted well and are good in appearance. In the Halle region April was very wet and in this area also re-sowing is necessary owing to the damage caused by frost; the same is true also of Thuringia. In Central Hanover, as a result of the cold and damp weather, the sowings are about 20 days later than last year. The delay in the south-west of Hanover was not so great but damage was more serious for the fields had to be partially re-sown. Sowings began in South Germany at the beginning of April but growth was delayed by the wet and cold weather which prevailed throughout the month and, as a result of the hardening of the soil, there was a delay of two weeks in the last sowings. The condition of the fields sown after May is better.

In Czechoslovakia the weather was very cold and temperature fell much further below normal than it has done for many years, even registering 22° F at night. Rain, however, was scanty and sowings were completed. The early sown beet has already sprouted but the first stage of vegetation, hindered by cold, is slow and rather irregular.

Damage resulting from cold is more considerable in some cases and re-sowing had to be done while, in some fields, after a sudden shower followed by freezing winds, a hard crust was formed which had to be broken in order that the young plants might not be stifled. Parasites are beginning to inflict serious damage.

In Austria also cold was very severe and not even the most low-lying areas were exempt. The crops suffered some damage.

In Belgium, field work following the sowings was impeded and delayed by the unfavourable weather.

In England, the first half of April was rather cold except in the south-west and still colder in the second half which was characterised by copious rains. Temperature rose at the end of the month. In the south-west, unlike the rest of the country where difficulties were experienced, preparatory field work and sowings were done quickly, thanks to the fine weather.

Field work was done in good conditions in France but the cold of the middle of May somewhat slowed up growth.

In Hungary it will be necessary to re-cultivate the early sown fields, which have suffered considerably from frost.

In Poland also, the cold and changeable weather was unfavourable for the normal development of the crops.

No detailed information is available concerning the other European countries which grow sugar-beet, growth being only in its first stage. What has been said of the above-mentioned countries applies also to the other countries of Central and Northern Europe, weather having produced about the same effect on crops. However, as these unfavourable conditions were experienced so early, it is not yet possible to state whether they will have an appreciable effect on the sugar-beet harvest.

The U. S. S. R. did not escape the general weather conditions. However, the information indicates that the beet crops, though backward in growth, have a good appearance.

Crop condition is better in Southern Europe, though the growth of the young crop was not uniform in many cases. The delay in sowing was not experienced to the same extent while in some areas there was no interruption.

Statistics supplied by the " Association Internationale de la Statistique Sucrière "
of Vienna.

Area sown to sugar-beet.

COUNTRIES	1935	1934	COUNTRIES	1935	1934
	acres	acres		acres	acres
Germany	893,823	858,869	Italy	210,000	209,679
Austria	107,791	122,966	Poland	277,000	276,735
Belgium	113,080	118,654	Romania	87,200	84,000
Denmark	107,500	105,850	Sweden	123,180	124,965
Irish Free State	53,970	44,200	Czechoslovakia	359,331	356,932
Hungary	91,000	93,190	Turkey	57,272	71,518

There are no considerable modifications to record this month in the estimates of areas sown. The figure for Germany, which covered the total area cultivated to beet, has been replaced by that of the area of beet to be delivered to factories which has been supplied by the *Verein der Deutschen Zuckerindustrie*, while in the case of Turkey we have taken the estimates supplied, with others, by the *Association Internationale de la Statistique Sucrière* of Vienna which are printed separately.

E. R.

* * *

Austria: Sowings of sugar beet were finished almost everywhere by the end of April. Growth is slow owing to the cold weather. Crop condition of the beets at the beginning of May was 2.1 against 2.6 on 1 May 1934.

France: Sowing of sugar-beet was carried out generally in good conditions. Sprouting and growth, which were impeded by the cold at the end of April, were fairly satisfactory later.

Production of beet-sugar (raw).

COUNTRIES	TOTAL PRODUCTION DURING THE SEASON				
	1934-35 1)	1933-34	Average 1928-29 to 1932-33	% 1934-35	
	thousand centals			1933-34 = 100	Average = 100
Germany	36,433	31,508	40,038	116	91
Austria	4,982	3,758	3,111	133	160
Belgium	5,842	5,360	5,553	109	105
Bulgaria	50	916	763	5	7
Denmark	1,992	5,375	3,291	37	60
Spain	7,055	4,850	5,827	145	121
Irish Free State	1,643	778	455	211	361
Finland	256	161	83	160	309
France	26,390	20,787	21,715	127	121
Great Britain	14,670	11,163	6,842	131	214
Hungary	2,638	2,985	4,099	88	64
Italy	7,870	6,713	8,430	117	93
Latvia	1,184	643	229	184	516
Lithuania	335	178	283	188	121
Netherlands	5,108	6,099	5,556	84	92
Poland	9,832	7,561	14,759	130	67
Romania	2,568	3,554	2,447	72	105
Sweden	5,953	6,720	3,740	89	160
Switzerland	213	198	140	108	152
Czechoslovakia	13,999	11,371	20,650	123	68
Yugoslavia	1,367	1,642	2,324	83	59
<i>Total Europe a)</i>	<i>150,380</i>	<i>132,320</i>	<i>150,335</i>	<i>114</i>	<i>100</i>
U. S. S. R. 3)	29,760	21,943	26,553	136	112
<i>Total Europe b)</i>	<i>180,140</i>	<i>154,266</i>	<i>176,888</i>	<i>117</i>	<i>102</i>
Canada	1,418	1,493	1,027	95	138
United States	25,125	35,169	24,946	71	101
<i>Total North America</i>	<i>26,543</i>	<i>36,662</i>	<i>25,973</i>	<i>72</i>	<i>102</i>
Japan	764	564	570	136	134
Turkey	1,433	1,598	335	90	428
<i>Total Asia</i>	<i>2,197</i>	<i>2,162</i>	<i>905</i>	<i>102</i>	<i>243</i>
GENERAL TOTALS { a) . . .	179,120	171,144	177,213	105	101
{ b) . . .	208,880	193,087	203,766	108	103

a) Not including U. S. S. R. — b) Including U. S. S. R. — 1) Approximate data. — 2) Average 1931-32 to 1932-33. — 3) Sand sugar.

Hungary: Sugar-beet was sprouting at the end of the first week of May. The early sowings were damaged by frost and re-sowing must be done in some places.

Italy: The germination of sugar-beet was delayed by the unfavourable weather of April. Subsequently, crop condition improved as a result of rain and it is now considered to be fairly good.

Czechoslovakia: By the beginning of May sowing of sugar-beet was finished in Slovakia and South Moravia, while in Bohemia and the other parts of Moravia they were still proceeding. Early sown beet has already sprouted.

U. S. S. R.: The area sown to sugar-beet on 1 May for the whole territory of the Union was 2,558,000 acres, or 94.5 % of that stipulated in the plan. In Ukraina the area sown up to 5 May amounted to 99.1 % of the plan.

In the main sugar-beet growing regions (Ukraina, North Caucasus, Central Black Earth region), weather conditions in the second half of April and the first decade of May were favourable to the crop on the whole. Temperature, however, was below the average of a long series of years and the growth of plants was delayed.

Production of cane-sugar.

COUNTRIES	1934-35 1)	1933-34	Average 1928-29 to 1932-33	1934-35 1)	1933-34	Average 1928-29 to 1932-33	Percentages for 1934-35	
							1933-34 = 100	Average = 100
	Thousand centals			Short tons			%	
AMERICA.								
Argentina	7,540	6,961	7,863	377,000	348,045	393,136	108	96
Brazil	15,432	14,330	22,000	800,000	720,000	1,099,986	108	70
Cuba	51,853	50,945	78,613	2,593,000	2,547,193	3,930,573	102	66
Ecuador	441	449	451	20,000	22,500	22,554	98	98
United States (La) . .	4,034	4,100	3,584	202,000	205,000	179,200	98	113
Guadeloupe	882	921	578	40,000	46,073	28,895	96	153
Jamaica	1,676	1,609	1,291	84,000	80,000	64,536	104	130
Mexico	5,291	4,145	4,742	260,000	207,000	257,082	128	112
Peru	8,819	9,538	8,676	440,000	476,902	433,772	92	102
Puerto Rico	14,881	22,077	16,222	744,000	1,103,811	811,101	67	92
Dominican Republic .	8,047	8,565	8,306	402,000	428,250	415,308	94	97
<i>Total America . . .</i>	<i>118,896</i>	<i>123,640</i>	<i>152,326</i>	<i>5,962,000</i>	<i>6,184,774</i>	<i>7,616,143</i>	<i>96</i>	<i>78</i>
ASIA.								
Taiwan	20,360	14,265	17,725	1,018,000	713,226	886,224	143	115
India 2)	113,904	109,133	78,266	5,695,000	5,457,000	3,913,000	104	145
Japan 3)	2,321	1,635	1,915	116,024	81,740	95,773	142	121
Java	10,551	13,604	55,081	527,560	680,184	2,753,998	78	19
Philippine Is. 4) . . .	15,432	31,526	21,572	800,000	1,580,000	1,078,572	49	72
<i>Total Asia</i>	<i>162,568</i>	<i>170,163</i>	<i>174,559</i>	<i>8,156,584</i>	<i>8,512,150</i>	<i>8,727,567</i>	<i>96</i>	<i>93</i>
AFRICA.								
Egypt	2,870	3,406	2,892	145,000	170,303	144,583	84	99
Madagascar	190	183	133	9,500	9,150	6,650	104	142
Mauritius	3,943	5,764	4,954	197,200	288,200	247,720	68	80
Reunion	1,402	1,707	1,042	70,000	85,350	52,107	82	134
Union of South Africa	7,175	7,823	6,690	358,738	391,173	334,471	92	107
<i>Total Africa</i>	<i>15,580</i>	<i>18,883</i>	<i>15,711</i>	<i>780,438</i>	<i>944,176</i>	<i>785,531</i>	<i>82</i>	<i>99</i>
OCEANIA.								
Australia	14,330	14,358	12,304	720,000	717,913	615,180	100	116
Hawaii	20,944	20,580	19,557	1,050,000	1,028,990	977,817	102	107
Fiji Is.	2,491	2,579	2,170	125,000	129,000	108,508	97	115
<i>Total Oceania</i>	<i>37,765</i>	<i>37,517</i>	<i>34,031</i>	<i>1,895,000</i>	<i>1,875,903</i>	<i>1,701,505</i>	<i>101</i>	<i>111</i>
GENERAL TOTALS . .	334,809	350,203	376,627	16,794,022	17,517,003	18,830,746	96	89

1) Approximate data. — 2) Production of *gur*. — 3) Production of sugar (refined and raw) and molasses. — 4) Production of sugar and *panocha*.

Argentina: The condition of the cane in Tucuman at the end of March was excellent and very high yields were anticipated. Condition in the Chaco, Jujuy and Corrientes was normal.

Barbados: In March the weather was favourable for reaping.

British Guiana: The heavy and frequent rainfall somewhat hindered cane reaping.

Leeward Islands: In March the weather was rather dry in Antigua and St. Kitts and more rain was wanted.

Jamaica: In March the cane crop was being ground everywhere under favourable weather conditions.

Trinidad: It was reported in March that the results obtained by the sugar factories were very satisfactory and that the present crop would probably exceed expectations.

Taiwan: Growing conditions of the cane planted between last summer and the spring are fairly good; those of the cane being cut are fairly satisfactory.

Netherlands Indies: (Aneta) The monsoon changed in the second half of April and towards the end of the month weather was determined by the east monsoon. The condition of the cane in old plantations was satisfactory everywhere. The yield shows much variation but it seems fairly high on the whole. Work of cultivation in the more recent plantations and the planting of shoots are making good progress.

The rains have caused water-logging in some places which in several cases could not be remedied owing to a shortage of labour. No considerable disease or insect damage was reported.

(Telegram of 20 May): The inter-season weather experienced between the two monsoons continues except on the north coast where the east monsoon has begun. The approach of the east monsoon is being felt locally in other areas. Weather was on the whole favourable for agricultural work which proceeded regularly except in some districts where labour is scarce. Rather serious damage resulting from gum disease was reported.

The crop conditions of cane in old plantations in satisfactory and promises good yields, though the results of the preliminary analyses of the cane vary greatly, from one district to another.

Egypt: The cultivation of the late remaining areas under sugar cane is in progress. The growth is satisfactory. The cutting of the old crop is over. Work in the sugar factories is ended.

Mauritius: In March the standing cane crop was in very good condition. The weather continued to be favourable.

VINES

Austria: Growth in vineyards recovered slowly. A comparatively large number of new plantings has been made this year.

Considerable damage was caused by frost in the first days of May in the vineyards of Lower Austria. Crop condition on 1 May was 1.9 against 1.7 on 1 April this year and 2.3 on 1 May 1934.

Spain: Growth was delayed by cold, and extensive and sometimes serious damage by frost occurred in the important viticultural area of New Castile at the end of April. In other regions condition of vines was good at the end of April.

France: The second half of April was rather cold and wet in the Loire valley and the east. Drought continued, however, in the south and south-west. Growth, on the whole, is late.

The frosts of the first half of April caused serious damage in Gironde and in some other vineyards in the south-west. Otherwise, damaged was limited, particularly in the south owing to the rather backward growth. The condition of vines at the beginning of May was fairly satisfactory on the whole.

Hungary: The growth of vines was slow owing to the cold weather. Frost in the first week of May caused considerable damage, especially in the Great Plain. In other vine growing areas damage varied according to variety and district.

Italy: The rather cold weather which prevailed up to the beginning of May impeded growth in the northern and central areas. Some limited damage resulted from frost and hail. Budding is taking place in good conditions in the south and the formation of clusters appears good in Apulia and Sicily. Budding has also begun in the central region. The conditions of vines was good on the whole at the beginning of May.

Luxemburg: The weather of April was favourable to the growth of vines.

The area under vines this year is estimated at 2,540 acres which is the same as that of last year while the average of the five years 1929-33 was 3,000 acres. Percentages: 100.0 and 85.5.

Portugal: Pests have caused considerable damage in vineyards in the central parts of the country. In the other viticultural areas growth is satisfactory.

Czechoslovakia: Vines wintered well. Growth however, was impeded by bad weather in April and is 2 to 3 weeks late. On the 1st crop condition varied between average and better than average.

According to the final estimates, the production of grapes for wine in 1934 was about 1,072,000 centals against 1,182,000 centals in 1933 and an average in the preceding five years of 1,305,000 centals. Percentages: 90.7 and 82.2.

Corresponding figures for the production of table grapes were 153,000, 151,000 and 147,000 centals. Percentages: 101.6 and 104.3.

Argentina: The Wine Control Commission has decided to purchase 66 million Imperial gallons (79 million American gallons) of wine produced in 1934-35, with the object of keeping up prices. The purchase will be made by buying grapes on the plants at a price of 2.20 pesos per quintal. These will not be used for wine-making. The Commission, in addition, has fixed a maximum price of 6 centavos per litre for ordinary wine and 7 centavos for named types.

Chosen: According to the most recent estimate production of grapes in 1934 was 5,802,000 pounds against 5,400,000 in 1933 and 2,132,000 on the average of the five years ending 1932; percentages 107.4 and 272.1.

Algeria: Growth was very satisfactory at the end of April. The formation of clusters was fairly good but apparently smaller than that of last year, at least, in Algiers and Constantine. Flowering took place in good conditions. Local damage was caused by frosts and was particularly serious in several vineyards in Oran. Flea-beetle and endemic disease were notified while mildew made its first appearance in Constantine.

French Morocco: At the end of April some vineyards in the central districts suffered severely from frost. Sprouting was very good on the whole and flowering was in progress at the end of April. The unfavourable influence of the spring drought will be seen later in the growth and ripening of the grapes.

Tunisia: Vegetation of vines was good at the end of April.

Australia: The information given at the end of March, when the vintage was in progress, emphasised the considerable loss caused in South Australia by the excessive heat and drought which prevailed during the summer, and by grasshoppers. The loss amounts to 50 % of an average crop and even more in some non-irrigated vineyards, and, on the whole, the production of wine must be smaller than the low production of last year. The irrigated vineyards have withstood the drought and the crop of table grapes and dried grapes in South Australia is good. If this information is considered with that given last month for the other States of the Commonwealth, it would appear that this year's crop is one of the most mediocre ever obtained in Australia. It seems to be in the neighbourhood of that of 1930-31 (13,078,000 Imperial gallons or 15,705,000 American gallons). The crop of table grapes and grapes for drying is not as poor but again, hardly satisfactory.

OLIVES

Italy: The condition of olives in April was good. Some frost damage was notified. Trees are on the whole healthy.

Argentina: Olive picking was in progress at the end of March in the Province of Rioja. Grasshopper damage was recorded in some parts but the production of oil will be greater than that of last year.

Algeria: Growth in Algiers is hardly vigorous and flowering is irregular and backward.

French Morocco: Olive trees had a good appearance at the end of April, despite some psylla attacks.

Tunisia: Blossom seems to be more abundant than it was a year ago but olive psylla is widespread in all areas.

COTTON

U. S. S. R.: Weather in the Central Asiatic regions was predominantly dry and warm during April. Rains fell over most of this zone only in the last week of April. Weather in the first decade of May was again dry and warm in the new cotton growing regions (Ukraine, North Caucasus, Crimea). Rainfall in April and in the first decade of May was frequent and sometimes abundant.

Sowings of cotton were made more rapidly than last year, though in several regions of Central Asia owing to the drying up of streams feeding the irrigation canals, sowings had to be made again owing to the excessive dryness of the soil.

The total area sown to cotton in the whole of the Union was 3,680,000 acres, or 76.6 % of the Plan. State farms contributed 224,000 acres, or 92.2 % of the Plan and collective and individual farms together accounted for 3,453,000 acres, or 75.9 % of the Plan. In 1934 collective and private farms had sown 2,397,000 acres up to 1 May.

On 10 May 95 % of the cotton sowings provided for in the Plan had been accomplished.

Argentina: Cotton picking was interrupted in Santiago del Estero by the March rains. Quality and yield, however, are satisfactory. Picking was proceeding very actively in Corrientes. Grub damage was reported from some places. Beneficial rains brought about a recovery in the plantations in the Chaco. Disappointment was expressed by farmers at the fall in cotton prices which occurred in March.

United States: During the week ending 10 April, 1935, conditions in the cotton belt improved. Planting in Texas was progressing well into the northern part of the State and a considerable amount of cotton was coming up, with good stands, though general rains were needed before much progress was possible in the west and the extreme south of the State. Planting in Oklahoma was slow and was only just starting in the south-east. In Louisiana excellent progress was made with planting in the western and most of the central sections of the State, and some cotton was up along the northern border. In Mississippi progress was slow. In the eastern cotton belt rainy weather delayed preparations, especially in North Carolina.

During the week ended 17 April, there was slow advance with cotton planting in the northern portions of the belt owing to the cool and wet weather conditions. Planting in Texas progressed favourably in the eastern parts of the State and some cotton was up, with good stands except in the extreme south, where, the ground was too dry. In the northern section of the State conditions continued unfavourable. Oklahoma reported only a slow advance of planting in the southern localities, while in Arkansas very little ground was seeded owing to cold and wet weather. Conditions in Louisiana and Mississippi were also unfavourable for planting, and growth was generally checked. In the eastern parts of the cotton belt growth was generally poor.

The week ended 24 April was too cool, especially in the northern belt. Eastward of the Mississippi River the progress of planting was rather slow generally, while in the northern half of the eastern belt the ground was too wet in many cases for field work. Conditions in Texas and Louisiana improved with beneficial rains in some of the hitherto dry sections of Texas. General conditions in Texas were satisfactory, much cotton being up, with good stands in the Southern portion of the State. The progress of planting was slow in many sections of Oklahoma, and rain was badly needed in the north-west, while in Arkansas, although planting was progressing, the bulk of the crop was still to be planted and much replanting was necessary. In Georgia conditions were generally favourable, except in the south-central portion, where rains were needed.

During the week ended 1 May, rainfall was moderate in the eastern half of the belt and rather heavy in the central and gulf sections, Arkansas, and the eastern portions of Oklahoma and Texas. Temperatures were mostly above normal except in the west. Growth in Texas was rather slow generally because of the coolness of night temper-

atures, while dryness continued in the extreme south of the State. In Oklahoma little was planted outside of the southern and east central portions of the State, while rains at the week-end retarded field work in Arkansas and the northern part of Louisiana.

During the week ended 8 May, the weather was mostly warm and dry in the eastern belt and cool and wet in the central and western belts. In Texas fieldwork was mostly at a standstill, and some replanting was necessary in the northern sections. Freezing temperatures were experienced in the extreme north-west, light to moderate rains fell in the extreme south-western third of the State, while rainfall elsewhere was heavy and excessive. Growth of early planted cotton was slow due to low temperatures, but the crop conditions averaged fair to good. In Oklahoma cool and wet weather delayed farmwork, except in the north-west and west-central parts of the State. Progress of planting was slow, little being accomplished, while some seed was washed out and the progress of early planted cotton was poor. In Alabama, Georgia and North and South Carolina conditions were more favourable and progress was satisfactory. In Arkansas excellent progress was made with planting in the first part of the week, but work was stopped at the end of the week by heavy rains.

During the week ended 15 May the temperature averaged generally above normal throughout the cotton belt and rainfall was light except for a few local areas. In Texas cotton made slow growth because of cool nights, and much remains to be planted and replanted in the North-Eastern quarter, while many fields need cultivation. In Oklahoma seeding made only fair progress, and there remains a considerable amount yet to do, while the nights are too cool for good growth. In the Central States the wetness of the soil during the first part of the week delayed work, but it dried out rapidly during the latter part, both work and growth proving satisfactory. In the Atlantic area weather was favourable and planting is well advanced in the Northern limits. Stands and growth are good in this area.

Haiti: Particular interest attaches to the cotton crop this year in view of the estimates of a record crop made at the beginning of the season and of the recent discovery that the Mexican weevil is present to a serious extent in some of the cotton growing areas. Cotton has become a profitable crop and the area cultivated has been greatly increased. Production has been greatly stimulated by the substantial rise in cotton prices which has occurred during the last two years. Cotton has been regarded as one of the most promising products for export and efforts have been made to promote its cultivation with the object of relieving the country from its dependence on coffee. This year's crop appears to be particularly plentiful. Cotton shipments in the period October 1934-February 1935 show an increase of 47 % on those of the same period of the year 1933-34. If the same rate of increase is maintained in the coming months, total exports for this year will be well above 32,300 bales of 478 lb net weight. The largest exports hitherto recorded are those of 1931-32 (29,100 bales).

Egypt: During the first half of April, the weather was very changeable and strong winds were prevailing. A sudden rise in the temperature set in the later days of April and continued to the end of the month.

All remaining areas were completely cultivated during the month. The germination and the growth were however, unsatisfactory owing to the variability of the weather during the first half of the month; this having led to the prevalence of thrips (*Heliothrips indicus*, Bagn.) in many areas in all provinces, especially in the northern districts and in Fayum, where the attack was strong and almost general in all cultivations, particularly early ones. In consequence of the above factors, growth was retarded and

many plants dried up. This necessitated repetition of resowing, thus raising its proportion to 50 % in certain fields, while in other fields sowing has had to be entirely renewed. The improvement of the weather conditions during the latter half of the month and the rise in the temperature during the last week, led to the amelioration of growth and the mitigation of the attack by the thrips, which, by the end of the month was almost traceless.

According to market information, area planted in Lower Egypt is practically the same as that of last year, while in Upper Egypt a small increase is reported. The area under *Sakellaridis* seems to be smaller than last year, but increases are reported for *Giza 7*, *Zagora*, *Maarad*, *Sakha 4* and *Ashmuni*. Other varieties are in diminution and *Pilion* is apparently abandoned.

Nigeria: Up to 24 February 1935, 188,272 centals (39,387 bales of 478 lb.) of cotton had been purchased for export, as against 84,880 (17,757) during the same period last season, that is, an increase of 121.8 %.

Nyasaland: In March the weather was comparatively cold with abnormal rainfall and the cotton crop was expected to be below the previous estimates.

Tanganyika Territory: Abundant rains were generally experienced in March. Prospects for the cotton season were good in the lake districts and moderate in the Central Line areas.

The amount of cotton lint available for sale this season is estimated at 233,500 centals (48,800 bales of 478 lb.).

FLAX AND HEMP

Belgium: The flax crop has increased and the sowings are growing well. The wet weather, however, resulted in the growth of weeds.

France: Sowings were made in the main in fairly favourable conditions. The growth of the seedlings, though hampered in the second half of April by cold, improved subsequently.

Great Britain and Northern Ireland: Some fields have already been sown in Northern Ireland but the work is not yet general. It is estimated from the sales of seed that a fair increase in the acreage this year will result.

Hungary: At the end of the first week of May sowing of flax and hemp was proceeding. The early sowings have grown uniformly but vegetation was delayed by the cold. Losses varying from 20 to 30 % of the area sown to these crops was notified in some places.

Czechoslovakia: The area sown to flax this year is about 27,500 acres against 23,500 in 1934 and 27,000 on the average of the five years ending 1933; percentages 117.2 and 101.8.

The area sown to hemp this year is about 18,100 acres against 18,100 in 1934 and 20,000 on the average of the five years ending 1933; percentages 100.2 and 90.7.

Yugoslavia: According to the most recent estimate, area cultivated to winter flax in 1934-35 is about 16,200 acres against 16,000 in 1933-34 and 15,000 in 1932-33; percentages 101.7 and 107.8.

U. S. S. R.: According to the incomplete information of the Commissariat of Agriculture, the area sown up to 5 May 1935 to flax for fibre (Dolgunez type) was 2,888,000 acres, or 56.6 % of the plan. In 1934, 1,784,000 acres, or 34 % of the plan,

had been sown up to the same date. Flax sowings in general are 10 to 15 days earlier than last year and 20 to 25 days earlier than 1933.

On 10 May the area sown to flax amounted to 70 % of the plan, compared with 865,000 acres sown up to the sowing date last year.

Argentina: Preparatory field work was difficult in April owing to the drought. A larger area than that of last year is expected in the province of Santa Fé.

Canada: The area expected to be sown to flax for linseed this year, according to farmers' intentions as at 1 May, is 217,000 acres against a harvested area of 226,900 acres in 1934 and an average in the five preceding years of 463,400 acres. Percentages 95.6 and 46.8.

HOPS

Hungary: Hops grew slowly during the first week of May owing to the cold weather. Frost damage was reported only in two provinces.

TOBACCO

Belgium: The tobacco crop is developing slowly.

Hungary: The tobacco plants in hot-houses were growing well but those transplanted were damaged by frost and will have to be replaced.

Argentina: Harvesting of tobacco was proceeding in March in Corrientes and yields were satisfactory. The quality of the crop in good but prices are low. The crop was late in Salta but promised a good outturn. In Tucuman, 50 % of the crop had been harvested by the end of March with yields and quality better than those of last year.

Algeria: The growth of plants and transplanting are backward in Alger. The latter were finished in good conditions in Constantine. There was some frost damage.

Nyasaland: It was reported in March that the tobacco crop in the Southern Province was fair and that, in the Northern Province, it had been adversely affected by the drought in February.

French Morocco: The April drought hindered transplanting considerably.

OTHER PRODUCTS

Cacao.

Brazil: The following are the statistics of crop movement in Ilheus for the past season compared with 1933-34.

Entries by rail (1,000 lb.)	April 1935	May 1934 to April 1935	April 1934	May 1933 to April 1934
Ilheus zone	8	80,915	2	85,701
Rio de Contas zone	—	9,433	—	8,754

The collection of the 1935-36 crop began in April and it was expected that cacao would arrive in Ilheus early in May. Prospects for the forecrop were reported to be excellent.

Weather continued unsettled during the month. Rainfall at Ilheus was 13.50 inches (343 mm.) while the average is 10.31 inches (262 mm.). The severe storms reported to have caused much damage in the city of Bahia have not affected the Ilheus district.

French West Africa: According to recent statistics, production in the Ivory Coast in 1933-34 was 1,005,000 centals compared with 675,000 centals in 1932-33 and 568,000 in 1931-32. The expansion appears to have continued in 1934-35. 1934 exports seem to have left a surplus of about 88,000 centals at the beginning of the present year, but the 1934-35 crop appears to be moving better. During the first three months of 1935 (the main crop is harvested from November to February) 469,000 centals were exported against 400,000 centals in the first three months of 1934.

Tea.

U. S. S. R.: According to the most recent estimate area cultivated to tea in 1934 about 85,000 acres against 82,000 in 1933 and 35,000 on the average of the five years ending 1932; percentages 103.8 % and 244.7 %. The corresponding production is estimated at about 3,197,000 lbs. against 1,744,000 and 705,000; percentages 183.3 % and 453.4 %.

India: The weather which prevailed for the most part in the tea growing districts of North-East India during March was hot and dry and in some places severe hail storms were experienced at the end of the month. Crop prospects which are dependent on rainfall were then only fair. In South India some useful showers fell towards the end of March and prospects improved.

In North India plucking was begun but very little leaf was taken off during March. In South India, the outturn was 3.94 % ahead of that to the same date last year.

Japan: As a result of the favourable weather, crop condition of tea was good at the beginning of May.

Nyasaland: In March the tea crop was reported as being below expectations.

Coffee.

French West Africa: The 1933-34 coffee crop in the Ivory Coast was 67,900 centals compared with 44,500 centals in 1933, 29,300 in 1932 and 10,700 in 1930. The progress seems to have been maintained in 1934-35 and, in any case, great efforts have been made to promote the cultivation of coffee. The administrative nurseries produced about 21.5 million plants in 1934, 9.2 millions of which were distributed and on 31 December last they still had 15.7 million plants to distribute.

Kenya: It was reported in March that the 1935-36 crop would be a good one, provided the long rains materialised without any further delay.

Tanganyika Territory: The estimated coffee crop available for sale this season is 318,900 centals.

Groundnuts.

Nigeria: The total groundnuts crop was estimated in March at about 3,600,000 centals.

Tanganyika territory: The amount of groundnuts available for sale this season is estimated at 308,200 centals.

Colza and sesame.

Austria: Winter colza was good in appearance at the end of April. Crop condition at this date was 2.1 against 1.8 on 1 April this year and 2.4 on 1 May 1934.

Greece: According to the final estimate, area sown to sesame in 1934 was about 101,700 acres against 106,900 in 1933 and 63,600 on the average of the five years ending 1932; percentages 95.1 and 159.9. The corresponding production is estimated at about 214,000 centals (10,700 short tons) against 161,000 (8,000) and 113,000 (5,700); percentages 132.7 and 188.6.

Netherlands: Crop condition of colza was fairly good, but further cultivation was done in some places in Groningen owing to insect damage. The condition of colza was not so good in Zeeland.

Crop condition of colza on 18 April 1935 in the system of the country was 62 as against 66 on 20 April 1934.

Poland: The condition of colza, which had already suffered severely during the winter, was worsened by the unfavourable weather of the period 15 March to 15 April. Crop condition expressed in the system of the country fell from 3.0 on 15 March to 2.5 on 15 April against 3.2 on 15 April last year. The colza was destroyed in most provinces by frosts and the fields in many districts had to be re-cultivated.

The sharp fall in temperature and the snow of the beginning of May made the condition of colza still worse.

Romania: Winter colza has been much affected by the April frosts.

Czechoslovakia: The area sown this year to colza and rape is 5,500 acres, 66.3 % and 57.3 % above that of last year and of the quinquennial mean respectively.

Yugoslavia: According to the most recent estimate, area cultivated to rapeseed in the winter 1934-35 is about 33,200 acres against 22,200 in 1933-34, percentage 149.7.

Chosen: According to the most recent estimate, area cultivated to sesame in 1934 was 24,700 acres against 24,600 in 1933 and 23,900 on the average of the five years ending 1932; percentages 100.4 and 103.4. The corresponding production is estimated at 94,200 centals (4,700 short tons) against 98,200 (4,900) and 97,100 (4,900); percentages 95.9 and 97.0.

India: According to the most recent estimate production of sesame this year in about 9,050,000 centals (452,000 short tons) against 12,118,000 (606,000) in 1933-34 and 11,222,000 (561,000) on the average of the five years ending 1932-33; percentages 74.7 and 80.6.

Tanganyika Territory: The amount of sesame available for sale this season is estimated at 96,100 centals (4,800 short tons).

Sericulture.

Japan: Crop condition of mulberries at the beginning of May was rather poor owing to the unfavourable weather conditions.

According to the most recent estimate, the quantity of eggs for incubation for spring cocoons this year will be about 2,436,400 ozs. against 2,732,400 in 1934 and 2,783,900 on the average of the five years ending 1933; percentages 89.2 and 87.5.

SUPPLEMENTARY FIGURES

As the production and area for most countries were published in the February number of the Monthly Crop Report and Agricultural Statistics, it is not necessary to repeat them again this month. Hence only the new data and any modifications of the figures published last month are given in continuation. In another table is shown the total world production based on the figures received up to the time of going to press.

COUNTRIES	AREA					PRODUCTION								
	1934 — 1934/35	1933 — 1933/34	Average 1928 to 1932 1928/29 to 1932/33	% 1934 and 1934/35		1934 — 1934/35	1933 — 1933/34	Average 1928 to 1932 1928/29 to 1932/33	1934 — 1934/35	1933 — 1933/34	Average 1928 to 1932 1928/29 to 1932/33	% 1934 and 1934/35		
				1933 1933/ 1934 = 100	Aver. = 100							1933 — 1933/34	Aver. = 100	
WHEAT														
1,000 acres														
Finland	126	91	44	138.0	288.0	1,997	1,476	628	3,327	2,460	1,046	135.2	318.0	
Greece 1)	1,983	1,713	1,402	115.7	141.4	17,286	17,031	7,503	28,809	28,385	12,505	101.5	230.4	
Hungary	3,799	3,924	3,969	96.8	95.7	38,895	57,815	47,466	64,824	96,356	79,109	67.3	81.9	
U. S. S. R.	87,106	82,040	80,459	106.2	108.3	670,428	611,344	478,581	1,117,358	1,018,886	797,619	109.7	140.1	
Algeria	4,068	3,993	3,771	101.9	107.9	26,117	19,199	18,117	43,528	31,998	30,195	136.0	144.2	
Tunisia	1,947	1,754	2,005	111.0	97.1	8,267	5,512	8,139	13,779	9,186	13,566	150.0	101.6	
RYE														
Finland	613	575	527	106.6	116.3	8,726	8,194	6,727	15,582	14,633	12,013	106.5	129.7	
Greece 1)	204	184	153	111.2	133.7	1,629	1,568	985	2,909	2,800	1,760	103.9	165.3	
Hungary	1,586	1,677	1,576	94.6	100.6	13,653	21,087	16,172	24,381	37,655	28,878	64.7	84.4	
U. S. S. R.	61,777	62,766	65,336	98.4	94.6	443,792	533,300	472,981	792,488	952,324	844,612	83.2	93.8	
Algeria	3	3	4	107.2	89.1	25	16	26	45	29	47	156.5	95.9	
Argentina 2)	1,458	904	811	161.2	179.7	8,841	4,059	4,463	15,787	7,249	7,970	217.8	198.1	
BARLEY														
Finland	326	320	288	101.9	113.1	4,608	3,936	3,420	9,599	8,200	7,124	117.1	134.7	
Greece 1)	588	554	497	106.1	118.5	4,721	5,059	3,443	9,836	10,540	7,172	93.3	137.1	
Hungary	1,181	1,197	1,131	98.6	104.4	11,992	18,551	13,874	24,983	38,649	28,906	64.6	86.4	
U. S. S. R. . . . .	...	18,039	18,039	...	...	150,797	173,063	131,661	314,165	360,555	274,298	87.1	114.5
Algeria	3,131	3,450	3,423	90.8	91.5	21,482	17,276	16,976	44,755	35,992	35,264	124.3	126.9	
Tunisia	1,186	927	1,328	128.0	89.3	3,307	3,527	5,115	6,890	7,349	10,656	93.7	64.7	
Argentina 2)	1,705	1,379	960	123.7	177.6	19,533	16,195	9,491	40,695	33,740	19,774	120.6	205.8	
OATS														
Greece 1)	353	341	309	103.5	114.1	2,352	2,962	1,756	7,350	9,257	5,486	79.4	134.0	
Hungary	552	570	636	96.8	86.9	5,718	7,884	6,972	17,869	24,637	21,789	72.5	82.0	
U. S. S. R. . . . .	...	41,267	42,948	...	...	416,675	339,733	313,234	1,302,100	1,061,660	978,849	122.6	133.0
Algeria	450	451	584	99.7	77.0	3,804	3,105	4,017	11,889	9,703	12,552	122.5	94.7	
Tunisia	86	51	97	169.1	89.2	441	220	818	1,378	689	2,556	200.0	53.9	
POTATOES														
Finland	208	199	179	104.4	115.7	25,574	28,258	18,972	42,622	47,096	31,619	90.5	134.8	
Greece 1)	47	43	30	109.4	159.9	3,467	2,493	1,189	5,779	4,155	1,982	139.1	291.6	
Hungary	717	726	693	98.8	103.5	46,709	40,910	37,413	77,848	68,182	62,354	114.2	124.8	
SUGAR-BEET														
1,000 short tons														
Hungary	110	108	156	102.3	70.3	20,332	20,817	27,871	1,017	1,041	1,394	97.7	72.9	
U. S. S. R.	2,906	2,996	2,722	97.0	106.8	250,446	198,196	216,142	12,522	9,910	10,807	126.4	115.9	

COUNTRIES	AREA					PRODUCTION							
	1934	1933	Average 1928 to 1932	% 1934 and 1934/35		1934	1933	Average 1928 to 1932	1934	1933	Average 1928 to 1932	% 1934 and 1934/35	
	—	—	—	1933	Aver.	—	—	—	—	—	—	1933	Aver.
	1934/35	1933/34	1928/29 to 1932/33	1933/ 1934 = 100	= 100	1934/35	1933/34	1928/29 to 1932/33	1934/35	1933/34	1928/29 to 1932/33	1933/ 1934 = 100	= 100
VINES (WINE)	1,000 acres					1,000 Imperial gallons			1,000 American gallons				
Greece 3) 4) . . .	378	352	307	107.5	123.1	79,965	85,053	59,793	96,031	102,141	71,806	94.0	133.7
Czechoslovakia . .	52	49	44	106.1	117.4	7,087	7,428	8,408	8,511	8,920	10,097	95.4	84.3
Yugoslavia 3) . .	492	482	461	102.1	106.7	85,057	62,753	88,541	102,146	75,360	106,330	135.5	96.1
Algeria 3)	958	922	683	103.9	140.1	484,887	368,040	327,376	582,306	441,983	393,150	131.7	148.1
OLIVES						1,000 centals			1,000 pounds				
Greece 5)	—	—	—	—	—	635	540	783	63,493	53,982	78,324	117.6	81.1
Cyprus	—	—	—	—	—	232	36	80	23,242	3,586	8,040	648.1	289.1
OLIVE-OIL						1,000 American gallons							
Greece	—	—	—	—	—	2,480	2,323	2,270	32,591	30,521	29,833	106.8	109.2
Cyprus	—	—	—	—	—	42	4	25	556	56	328	1,001.0	169.6
COTTON (GINNED)						1,000 bales of 478 lb.							
Greece 1)	109	72	47	151.3	232.3	228	152	78	48	32	16	149.7	290.8
U. S. S. R.	4,764	5,070	3,914	94.0	121.7	9,222	9,222	7,393	1,929	1,929	1,547	100.0	124.7
Uganda	1,171	1,091	808	107.4	145.0	871	1,091	819	182	228	171	79.8	106.3
FLAX (FIBRE)						1,000 pounds							
Hungary	6) 38	20	23	193.8	165.3	59	74	89	5,919	7,442	8,948	79.5	66.1
U. S. S. R. 7) . .	5,189	5,928	4,767	87.5	108.9	11,685	12,125	9,585	1,168,454	1,212,546	958,494	96.4	121.9
LINSEED						1,000 bushels							
Hungary	8) 38	20	23	193.8	165.3	173	113	101	309	202	180	153.3	171.6
Argentina 2) . . .	6,919	4,878	6,641	141.8	104.2	43,167	35,054	40,074	77,084	62,596	71,560	123.1	107.7
HEMP (FIBRE)						1,000 pounds							
Hungary	9) 27	21	19	126.3	144.1	151	148	122	15,127	14,836	12,235	102.0	123.6
Romania	113	118	101	95.4	112.1	543	574	466	54,294	57,397	46,604	94.6	116.5
HEMPSEED													
Hungary	10) 27	21	19	126.3	144.1	20	96	73	2,009	9,612	7,333	—	—
Romania	113	118	101	95.4	112.1	419	417	294	41,870	41,743	29,355	100.3	142.6
TOBACCO													
Greece 1)	192	192	217	100.2	88.5	883	1,210	1,172	88,295	120,987	117,205	73.0	75.3
Hungary	41	45	58	89.7	69.6	400	526	733	40,040	52,583	73,327	76.1	54.6
Romania	25	25	59	98.8	41.9	130	138	370	13,020	13,844	36,989	94.0	35.2
Canada	41	47	46	87.3	88.5	387	449	428	38,734	44,904	42,795	86.3	90.5

1) Area sown. — 2) Area harvested. — 3) Area bearing. — 4) Production of must. — 5) Table olives. — 6) Including 30,037 acres for seed. — 7) Dolgunetz variety. — 8) Including 7,997 acres for fibre. — 9) Including 3,064 acres for seed. — 10) Including 24,076 acres for fibre.

FODDER CROPS

Germany: The proportion of the sown acreage abandoned as the result of winter damage is 2.9 % (as against 4.8 last year) in the case of clover and 1.1 % (4.3 %) in the case of alfalfa.

The condition of the chief fodder crops at the beginning of May was as follows: clover, 2.9 against 3.0 at the beginning of April 1935 and 2.9 on 1 May 1934, alfalfa, 2.4 (2.7 on 1 May 1934); irrigated meadows, 2.5 (2.5); unirrigated permanent meadows, 2.7 (2.7).

Austria: The cold weather of April delayed growth in temporary meadows but the ample soil moisture was very favourable to the development of grass. Clover to some extent was affected adversely by hoarfrost. The condition of permanent meadow and pasture is good. Crop condition of the chief fodder crops on 1 May was as follows. Red clover, 2.2 (against 2.2 on 1 April this year and 2.4 on 1 May 1934), alfalfa, 2.1 (2.1 2.7), mixed clover, 2.2 (2.2, 2.5), permanent meadows, 2.4 (2.3, 2.4) and pastures, 2.6 (2.3, 2.8).

Belgium: Pastures are well supplied but the growth of grass was held up. The damp weather in April, however, encouraged the growth of weeds.

Irish Free State: The weather during the first half of April was broken and unsettled with much rain.

Pastures grew well towards the end of the month.

France: On 10 May, the condition of all fodder plants, meadows and pastures was excellent. Big crops are expected.

Great Britain and Northern Ireland: The growth on pastures in England and Wales was checked by cold winds and lack of sun but the milder conditions at the end of April brought about some improvement. Grass in Scotland made excellent progress and at the beginning of May pastures had a fresh and promising appearance.

Clover and seeds made some growth during April and appeared to be strong and healthy and rather more forward than usual at this time of the year.

Good progress has been made in preparing the land for root crops and in many areas the sowing of mangels has commenced.

Hungary: The cold weather of the first week of May held up growth in temporary and permanent meadows and pastures. Frost has caused damage, especially in temporary meadows (alfalfa, oat and vetch mixtures and sainfoin).

Italy: Growth on pastures and meadows was backward during April owing to the drought. The weather was hardly favourable for hay making.

Latvia: According to the replies of agricultural correspondents, the crop condition of annual clover on 1 May was average in 41.1 % of the cases, above average in 46.8 % and below average in 12.1 %. Corresponding figures for biennial clover were 47.0 %, 26.0 % and 27.0 %.

Netherlands: The crop condition of red and white clover at the beginning of March was satisfactory. Growth in permanent meadows was well advanced and gave ground

for optimistic hopes, but later the cold weather hindered the growth of grass which recovered only with the advent of the warm days of the second decade of April.

The condition of fodder crops on 18 April in the system of the country, compared with the condition at the same date a year ago was as follows.

	18 April 1935	20 April 1934
Permanent Meadows.	67	74
Clover	66	69
Alfalfa	69	—

Poland: Crop condition of clover on 15 April, in the system of the country, was 2.9, that is, the same as that of 15 March, compared with 3.2 on 15 April 1934. The changeable weather of the second half of April, which was at first warm, dry and windy and marked later by considerable falls in temperature and even, at the beginning of May by falls of snow, affected clover unfavourably. Other fodder crops including lupins, mangels and meadows were affected in the same way and crop condition at the end of the first decade of May was poor in most cases.

There was a serious shortage of fodder and straw in the province of Warsaw, Polesie and Poznań and in the southern provinces.

Switzerland: Apart from the damage experienced here and there caused by the drought of last year and by white worm, permanent and temporary meadows show plentiful growth. Mice damage is reported in some places. Grass has begun to grow but warmer weather is required for further development.

Crop condition of permanent meadows on 1 May 1935 according to the system of the Institute was 98 as against 97 on 1 April 1935); that of temporary meadows (clover and alfalfa) was 96 as at the beginning of April 1935.

Czechoslovakia: The condition of clover which, however, owing to the drought of last year is thin, is satisfactory. Alfalfa and meadow grass promise a plentiful crop of green fodder if the weather conditions are favourable for growth.

Argentina: Crop condition of fodder cereals is good in general. Drought has caused damage to pastures in some places, but fodder supplies are plentiful.

(Telegram of 22 May): Field work and the sowing of fodder cereals are behind-hand owing to the hard soil.

Canada: Crop condition of hay and clover on 1 May was 92 against 93 on 1 May 1934.

Algeria: The temporary fodder crop in Oran was mediocre. It was more satisfactory in Alger but the permanent fodder crop there leaves much to be desired. The fodder crop in Constantine is excellent.

Egypt: Growth of *berسيم* is satisfactory. The fourth cutting from the early cultivations is in progress. Flowering is general in the areas left for seed. Harvesting of the areas for dry hay in Upper Egypt is over and the crop is good.

Tunisia: Hay production is plentiful in the north and central parts but quality is rather mediocre. Pastures in the south were beginning to suffer from the drought at the end of April but they were still well supplied everywhere.

Dairy production in the Netherlands.

The following table gives figures for the 1934 production of butter and cheese, compared with those for the years 1928 to 1933.

DESCRIPTION	1934	1933	1932	1931	1930	1929	1928
	thousand pounds						
Butter under State control. . . .	181,608	176,206	175,919	174,394	178,354	176,886	171,996
Butter manufactured under special control in the margarine factories	—	—	—	724	873	899	639
Butter not controlled (not exportable)	17,900	17,995	11,947	11,806	13,109	13,389	15,340
Cheese under State control. . . .	253,174	257,953	257,966	285,978	293,843	288,790	281,355
Cheese not controlled (not exportable)	3,394	9,389	5,459	6,863	8,051	8,404	10,002

The poultry and apicultural industry in Yugoslavia.

POULTRY.

The following table shows the numbers of poultry at the end of each year according to the official enquiry made at the end of January of each year following those indicated in the table.

Years	Poultry total	**) Fowls	Geese	Ducks	Turkeys
1920 (*)	15,075,292	13,329,740	742,684	630,960	371,908
1922	13,810,223	11,624,193	988,118	755,127	442,785
1923	14,195,968	11,994,593	1,019,102	673,540	508,733
1924	14,931,850	12,610,891	918,469	800,843	601,647
1925	16,198,207	13,678,862	981,663	888,672	649,010
1926	16,259,608	13,697,141	1,012,836	932,125	617,506
1927	16,279,432	13,838,973	976,977	863,614	599,868
1928	16,081,319	13,810,418	913,278	779,730	577,893
1929	17,515,977	15,143,149	932,284	791,212	649,332
1930	18,821,601	16,271,636	983,411	840,978	725,576
1931	19,010,009	16,425,277	1,011,646	884,121	688,965
1932	19,466,561	16,819,867	1,035,821	910,253	700,620
1933	19,785,021	17,013,571	1,038,134	974,995	758,321
1934	20,817,099	17,857,933	1,132,507	982,691	843,968

*) Census of 31 January 1921. — **) Including cocks and chickens.

After the appreciable decline in the numbers of fowls which occurred in 1922 as a result of the unfavourable weather and the shortage of feeding stuffs resulting from the poor cereal crop of 1921, the numbers of poultry have increased conti-

nuously except in 1928 when there was a slight fall following the poor harvests of 1927 and a cold winter. In 1934 the numbers were about 40 % greater than those of 1921.

The greatest increase occurred in the number of turkeys (more than 120 %). The next largest increases are those of geese and ducks (about 50 %) and, finally, fowls (35 %).

The increase in the total number of poultry has been accompanied in recent years by an expansion in the exports of live and dead poultry. In 1934 total poultry exports amounted to 42 million pounds as against 15.4 million pounds in 1921. The export of hens' eggs, on the other hand, after reaching 67 million pounds in 1930 gradually declined, the figure for 1934 being 26 million pounds which is smaller than that of 1921 (27 million pounds). The new trend of fowl raising towards the production of eggs rather than meat is the outcome of several economic and commercial factors.

The various restrictions recently imposed by the chief importing countries on Yugoslav eggs (quotas, increases in tariffs, stipulations for a higher weight of egg than that ordinarily obtained in Yugoslavia, stricter control of quality and packing, the regulations requiring indications of origin, etc.), the severe competition of other countries and the decline in egg prices on world markets have resulted in a rapid fall in the export of eggs from Yugoslavia in recent years.

Moreover, the greater demand for chickens and turkeys and the higher prices obtained for them on European markets have induced Yugoslav raisers to devote more attention to this new aspect of poultry farming.

It should be noted that, in addition to the favourable weather conditions of the last few years and the plentiful supplies of feeding stuffs resulting from the good cereal harvests together with the lower prices of the latter, numerous governmental measures have also assisted the development of poultry farming. These include the establishment of model farms, the organisation of fairs, participation in international exhibitions, the award of prizes, the importation of selected breeds for crossing with native types and, finally, the fight against infectious diseases (in particular, against *Cholera gallinarum* and *Pestis avium*).

APICULTURE.

Though it is still only of secondary importance in Yugoslav agriculture, beekeeping is of considerable economic value to the country, employing more than a hundred thousand people.

The products (honey and wax) are still entirely consumed within the country. The attempts to force exports of honey and wax have not yet met with success. Wax exports are still of small dimensions while exports of honey fell gradually from 220,000 pounds in 1925 to 33,000 pounds in 1934.

Nevertheless, the substantial domestic demand for honey (including honey for the preparation of the alcoholic beverage, *medovina*) and wax for the manufacture of candles has resulted in a steady expansion in apiculture during the last ten years as the following table illustrates.

Years	Straw hives with fixed frames	Hives with movable frames	Hives with mixed frames	Totals
1920 *)	410,613	119,697	4,136	534,446
1922	379,949	129,024	12,602	521,575
1923	365,435	132,342	16,725	514,502
1924	407,712	149,085	16,587	573,384
1925	417,719	169,333	18,229	605,281
1926	412,974	173,914	17,355	604,243
1927	394,295	196,817	17,008	608,120
1928	375,771	174,042	17,232	567,045
1929	390,471	168,375	19,215	578,061
1930	443,571	191,830	21,865	657,266
1931	414,867	208,410	15,412	638,689
1932	403,818	207,496	17,444	628,758
1933	425,815	232,922	12,226	670,963
1934	...	...	...	718,668

*) Census 31 January 1921.

The table shows that Yugoslav apiculture is still in a primitive stage, the number of straw hives with fixed frames amounting, even in recent years to two thirds of the total number of hives.

There has been in recent years, however, a constant tendency to increase the number of hives with movable frames, particularly in the northern parts of the country. The numbers in 1933 were nearly double those of 1921.

An official statistical enquiry into the production of honey and wax was made recently. The figures of the production of honey (8,650,000 pounds in 1933 and 13,000,000 in 1934) and wax (792,000 pounds in 1933 and 1,254,000 pounds in 1934) give a clear idea of the importance of Yugoslav apiculture.

G. S.

Live stock slaughterings in Argentina.

The following table shows the numbers of cattle, sheep and pigs slaughtered in Argentina during the years 1929 to 1934 for export and domestic consumption.

YEARS	CATTLE			SHEEP			PIGS		
	For export	For consump- tion	Total	For export	For consump- tion	Total	For export	For consump- tion	Total
Thousand head.									
1929	2,301	3,838	6,139	4,805	1,752	6,557	242	692	934
1930	2,137	3,828	5,965	5,264	2,086	7,350	206	704	910
1931	1,779	3,604	5,383	4,727	2,133	6,860	164	760	924
1932	1,691	3,654	5,345	4,386	2,381	6,767	213	790	1,003
1933	1,718	3,985	5,703	4,101	2,927	7,028	311	931	1,242
1934	1,794	4,208	6,002	3,507	2,919	6,426	425	958	1,383

The total number of animals slaughtered in 1934, except in the case of sheep, which show a decline of 602,000 head compared with 1933, has increased by 299,000 head in the case of cattle and by 141,000 in the case of pigs.

In all three kinds an increase is noticeable in the number of animals intended for consumption within the country which, for some years, has shown a tendency to increase resulting from the government's propaganda and the fall in prices.

So far as the slaughter of animals for export is concerned, it will be seen that the number of cattle killed in 1934, though very much below those of 1929 and 1930, is slightly greater than the figures of the three preceding years. The increase is particularly noticeable in the case of pigs, the number of which in 1934, was a record but, since 1930, the numbers of sheep have declined continuously. These movements are made still clearer in the following table showing the total exports of Argentine meat by type in the years 1929 to 1934.

Meat Exports from Argentina.

(1000 lbs.)

CLASSIFICATION	1929	1930	1931	1932	1933	1934
Beef, frozen	789,169	761,755	776,530	817,111	771,722	770,836
Beef, chilled	268,328	217,703	184,486	80,822	69,554	69,633
Mutton, chilled	177,379	177,164	183,079	155,715	137,053	106,907
Pig meat, chilled	10,772	10,648	11,636	14,370	20,402	33,204
Sausage, offal, etc., chilled	63,515	61,478	61,564	55,189	57,435	53,535
Canned meat	152,278	137,613	121,427	97,390	121,248	134,604
Canned tongue	933	933	939	1,129	3,091	4,182
Meat extract	3,693	3,708	2,639	2,899	3,660	3,373
Meat flour	28,830	20,582	22,979	25,860	28,764	27,847
Salted meat	10,401	8,523	7,736	4,242	10,132	15,366
Ham	79	42	172	4,118	5,873	6,609

World trade in eggs in the shell.

I. — THE TRADE IN EGGS AND THE NEW TENDENCIES
IN THE COMMERCIAL POLICY OF GOVERNMENTS.

The world trade in eggs in the shell in 1934 was influenced by new trends in the commercial policies of importing countries which seek to limit purchases of foreign products to a minimum. The restrictions imposed by the importing countries have effectively reduced imports, but the effects of their policy have been partly neutralised by the efforts of the exporting countries, on the one hand, and, on the other, by the requirements of the importing countries, which have found it difficult to increase domestic production to an extent sufficient to meet the demand.

The exporting countries have adapted themselves quickly to the new conditions by taking steps to re-organise their poultry industries and by improving the quality of eggs for export. The example was set by one of the world's largest exporting countries, the Netherlands, which, during the years 1933 and 1934, in a number of 'crisis decrees' took very energetic steps to transform producers' organisation in order to improve the situation of poultry

farms and their selling possibilities. The Governments of other exporting countries, *e.g.*, Poland, Romania, Turkey etc., introduced a radical reorganisation of poultry raising and an improvement in the prices of poultry products, by introducing selected breeds with the object of increasing the average yield of eggs (thereby reducing the cost of production) and of increasing the weight of eggs as a number of importing countries will only allow eggs exceeding a certain fixed minimum weight to be imported.

The restrictions imposed by the importing countries have thus effected an improvement in the poultry industries in the exporting countries which will result in a strengthening of the foundations of poultry production and in the creation of centralized and quicker systems of packing and marketing corresponding more closely to the requirements of consumers.

In those countries where the poultry industry is of some importance economically and commercially, Governments have begun to guard the interests of their poultry raisers in the terms of their commercial treaties and agreements, and eggs have become an article in the transactions based on barter between the countries which export and import this product. Thus in the relations between Poland and Spain, Polish egg exports are taken in exchange for grapes, wine, tomatoes and other typically Spanish products. In the transactions between Romania and Spain, Romanian eggs are exchanged for Spanish textiles. In the same way, the Irish Free State, by means of a commercial, reciprocal agreement, has granted a considerable quota of citrus fruits to Spain in return for a large quota of eggs, to be distributed in agreed quarterly proportions (with a maximum in the May-July quarter of 1935).

The case of Spain is typical of the new commercial tendency. This country has begun to import eggs from distant countries (Poland, the Irish Free State, Romania, etc) solely to secure an outlet for its own products on these markets.

On the other hand, the countries which import eggs, and which are attempting to make themselves independent of imports, must not only find legal methods of preventing imports from abroad but must also accomplish the much more difficult task of producing eggs in quantities sufficient to meet their requirements.

An increase in production based on the setting up of large-scale poultry enterprises, which must obtain the feeding-stuffs for poultry on the market, demands such a relation between the prices of feeding stuffs (which in this case form about 90 % of the cost of production of eggs) and the selling price of eggs as will leave a sufficient margin of profit for the undertaking. These conditions, however, can only be realised with difficulty when, as is the case in the majority of importing countries, on the one hand, government policy tends to restrict imports of cereals and to raise the price of cereals within the country, and, on the other, the interests of the national economy at large do not allow excessively high prices for eggs. Eggs are an article consumed in large quantities, occupying an important place in the food budget of the working classes and, therefore, having an influence on the costs of industrial production. These difficulties generally indicate that farms and, in particular, small and moderate sized holdings are the most suitable forms in which poultry raising can develop. In Germany, for example, some authorities have stated

that it is inadvisable to set up large establishments without an agricultural basis simply because their existence is too intimately dependent upon market movements. The predominant tendency is now to transform the individual exclusively interested in poultry breeding to one who raises poultry but who, as far as possible, himself produces the cereals (particularly maize) and other feeding-stuffs required for poultry. Similar principles are to be seen in the reorganization of the poultry industry set on foot in the Netherlands and the reorganization projects which are being studied in England and in Scotland.

It is clear, however, that the progress of the poultry industry in this sense cannot be rapid. This, together with the agreements entered into by these countries with the countries which export eggs in order not to lose the markets in the latter for their own exports of other articles, explains why the decline in the world egg trade was not so marked, up to the present, though it was already appreciable, as it is now becoming.

It should be added that the control of imports, though it has been an unfavourable influence on the volume of trade, has had a healthy effect and may help in preventing excessively sharp fluctuations in the price of eggs during the course of the year.

II. — THE VOLUME OF WORLD TRADE IN EGGS IN THE SHELL.

To analyse the changes which occurred in 1934, we will take the exports of the 17 countries which in 1933 contributed 83 % of the total world exports and the 8 countries which took 95 % of all imports.

World Trade in eggs in the shell — Exports.

(thousands of pounds).

Countries	1934	1933	1932	1931	1930	% 1934		
						1933 = 100	1932 = 100	1931 = 100
Bulgaria	32,042	34,547	41,456	49,314	42,359	92.8	77.3	65.0
Denmark 1)	155,091	147,480	152,218	134,251	118,806	105.2	101.9	115.5
Irish Free State 1)	57,343	57,366	64,205	76,220	78,301	100.0	89.3	75.2
France	2,488	821	2,306	15,104	45,217	303.1	107.9	16.5
Hungary	20,957	25,388	14,106	26,414	29,051	82.5	148.6	79.3
Italy	1,572	2,197	8,539	19,807	20,551	71.6	18.4	7.9
Netherlands	141,763	125,611	176,503	190,037	187,291	112.9	80.3	74.6
Poland	46,802	51,821	82,458	106,053	121,500	90.3	56.8	44.1
Romania	16,221	17,996	34,849	28,512	37,088	90.1	46.5	56.9
Belgo-Luxemburg Customs Union	31,121	44,111	82,413	78,090	69,441	70.6	37.8	39.9
U. S. S. R.	2,119	4,339	15,805	45,058	21,707	...	...	...
Yugoslavia	26,291	40,310	36,356	57,997	67,085	65.2	72.3	45.3
United States 1)	3,187	3,086	3,835	12,705	30,720	103.3	83.1	25.1
China 1)	44,030	48,869	49,037	84,234	84,922	90.1	89.8	52.3
Turkey	23,011	39,488	54,572	53,940	39,397	58.3	42.2	42.7
Egypt	13,061	19,497	24,378	14,606	11,146	67.0	53.6	89.4
French Morocco	21,370	21,849	19,712	18,785	21,794	97.8	108.4	113.8
Total	2) 638,469	684,776	862,748	1,011,107	1,026,376	93.2	74.0	63.1

1) The original figures, expressed in number of eggs, have been converted to pounds on the basis of the coefficient: 7,260 eggs = 1,000 lbs. — 2) For the U.S.S.R. 11 months.

The total exports of the 17 countries considered have fallen continuously during the last five years from 1,026 million lb. in 1930 to 638 million in 1934, that is, a decline of 37.8 %. At the same time, the imports of the 8 countries under consideration have also decreased, falling from 1,014 million lb. in 1930 to 656 million lb. in 1934 or a decline of 35.3 % during the period 1930 to 1935. If it is remembered that 350 million lb. represent approximately 2,600 million eggs, an idea can be formed of the decrease of imports into these countries during the last five years.

The most notable feature of exports is that the two largest exporters in the world, Denmark and the Netherlands, in spite of the fall in total imports, were able to increase their shipments considerably compared with 1933. Denmark, which for two years has taken first place in world exports, exported a record quantity in 1934 for the period from 1930 to 1934, with a figure of 155 million lb. which is equivalent to an increase of 5.2 % on 1933.

Export of eggs in the shell from Denmark, by destination.

(thousands of pounds)

Destination	1934		1933		1932		1931		1930	
	Absolute data	%	Absolute data	%	Absolute data	%	Absolute data	%	Absolute data	%
United Kingdom	103,650	66.8	103,295	70.0	104,548	68.7	114,231	85.1	101,288	85.3
Germany	34,725	22.4	33,877	23.0	46,109	30.3	17,975	13.4	17,065	14.4
Sweden	9	0.0	94	0.1	260	0.2	1,776	1.3	241	0.2
Other countries	16,707	10.8	10,214	6.9	1,301	0.8	269	0.2	212	0.1
Total . . .	155,091	100.0	147,480	100.0	152,218	100.0	134,251	100.0	118,806	100.0

The Netherlands also made a strong recovery from 1933, increasing its exports by 12.9 %. Exports in 1934, nevertheless, were still 25.4 % below the record of 1931.

Of the other two great exporters of Western Europe, the Irish Free State and the Belgo-Luxemburg-Customs Union, only the former was able to maintain its 1933 position, while the latter exported 29.4 % less than in 1933. When the destination of the Belgo-Luxemburg exports is examined, it is seen that, though the importance of the Union in German and Spanish markets did not undergo very sharp declines in 1934 compared with 1933, there were reductions on the English and Swiss markets of 6.3 million lb. and 2.8 million lb. respectively.

A detailed examination of Danish shipments shows that Denmark, in securing incontestably the first place in British imports and the second in German imports, sold to these two countries 89.2 % of its exports. Another fact worthy of note is that exports from Denmark to countries other than Great Britain, Germany and Sweden increased from 212,000 lb. in 1930 to 16,707,000 lb. in 1934, that is, from 0.1 % to 10.8 % of the total exports. This is an indication of the

new trade trend and also of the power of expansion of the Danish egg trade. Among the new markets which Denmark has entered, Switzerland, Spain and Czechoslovakia should be mentioned. Before 1933, Denmark did not export eggs to Spain while in 1933 it shipped 22.4 millions to this destination. Similarly, only small quantities were sold to Switzerland and Czechoslovakia before 1933 but in 1933, 39.1 and 3.8 millions respectively were exported. Detailed figures for countries of destination of Danish eggs are not yet available, but, according to Spanish statistics, it appears that Spain imported 4,960,000 lb. from Denmark in 1934, or nearly twice as much as in 1933.

This expansion in Danish trade is due to the coincidence of several favorable factors, the chief of which are the following: the quality of the product, the geographical situation of the country in the immediate neighbourhood of the great importing countries (Great Britain and Northern Ireland and Germany), the linking of the national currency to sterling which allows Denmark to sell on the British markets at comparatively low prices, the agreements with Germany where the disposal of eggs of good quality is assisted by measures seeking to control egg production and trade.

Export of eggs in the shell from the Netherlands, by destination.

(thousands of pounds)

Destination	1934		1933		1932		1931		1930	
	Absolute data	%	Absolute data	%	Absolute data	%	Absolute data	%	Absolute data	%
Germany	108,675	76.7	96,445	76.8	146,619	83.1	125,446	66.0	121,759	65.0
United Kingdom	18,177	12.8	19,243	15.3	24,932	14.1	56,999	30.0	56,649	30.2
Belgo-Luxembourg Customs Union	2,061	1.5	4,214	3.4	1,385	0.8	1,368	0.7	1,781	1.0
Spain	10,710	7.6	3,799	3.0	339	0.2	88	0.1	54	0.0
Switzerland	606	0.4	1,067	0.8	1,408	0.8	1,176	0.6	214	0.1
Other countries	1,534	1.0	843	0.7	1,820	1.0	4,960	2.6	6,834	3.7
Total . . .	141,763	100.0	125,611	100.0	176,503	100.0	190,037	100.0	187,291	100.0

The second largest exporter, the Netherlands, was able to maintain and consolidate its leading place in the German market and the second place on the British market by exporting 89.5 % of its total exports in 1934 to these two countries. The size of exports from the Netherlands to Spain has been increasing from year to year. These rose from 54,000 lb. in 1930 to 10,710,000 lb. in 1934.

During the years 1933 and 1934, some very important reforms were introduced in the Netherlands poultry industry tending to strengthen the basis of production, to increase production and to control trade. These steps, like the advantageous agreements made with Germany for the export of eggs, led to an increase on the 1933 figure of the exports of eggs from the Netherlands.

The substantial increase of exports from France combined with a decline in imports is worthy of note.

All the chief exporting countries of eastern and south-eastern Europe registered smaller exports than in 1933. Bulgaria, Poland and Romania were the most successful in dealing with the restrictive tendencies of the importing countries.

The results recorded by Bulgaria are to be ascribed partly, to the increase in exports to Germany and partly to its progress in the Spanish market, where Bulgaria before 1933 was absent.

Export of eggs in the shell from the principal European exporting countries.

(thousands of pounds)

GROUPS OF COUNTRIES	1934	1933	1932	1931	1930	% 1934		
						1933 = 100	1932 = 100	1931 = 100
<i>1st Group 1)</i>								
Eastern and South-eastern European countries (6 countries) .	144,432	174,401	225,030	313,328	318,790	82.8	64.2	46.1
<i>2nd Group 2)</i>								
Western European countries (4 countries)	385,318	374,568	475,339	478,598	453,839	102.9	81.1	80.5
<i>Total (10 countries) . . .</i>	<i>529,750</i>	<i>548,969</i>	<i>700,369</i>	<i>791,926</i>	<i>772,629</i>	<i>96.5</i>	<i>75.6</i>	<i>66.9</i>

1) Bulgaria, Hungary, Poland, Romania, Yugoslavia, and U.S.S.R. — 2) Belgo-Luxembourg Customs Union, Denmark, Irish Free State and the Netherlands.

The situation by groups of European countries as a whole is summed up in the table below which illustrates the varying effects of the import restrictions in the different importing countries.

The good progress made in the exports of French Morocco should be emphasised. Exports, compared with 1933, declined by only 2.2 %, and were maintained

Worlds Trade of eggs in the shell — Imports.

(thousands of pounds)

Countries	1934	1933	1932	1931	1930	% 1934		
						1933 = 100	1932 = 100	1931 = 100
Germany	167,480	184,933	315,937	315,554	353,221	90.6	53.0	53.1
Austria	14,725	19,772	25,196	38,428	38,804	74.5	58.4	38.3
Spain	76,138	83,561	51,328	50,056	58,731	91.1	148.3	152.1
France	26,469	34,694	28,384	67,643	31,582	76.3	93.3	39.1
United Kingdom 1)	310,612	303,785	330,606	428,666	438,852	102.2	94.0	72.5
Italy	18,191	19,363	77,138	54,320	50,315	93.9	23.6	33.5
Switzerland	32,952	33,024	37,128	34,506	30,332	99.8	88.8	95.5
Czechoslovakia	9,735	11,462	19,667	18,204	11,904	84.9	49.5	53.5
<i>Total . . .</i>	<i>656,302</i>	<i>690,594</i>	<i>885,384</i>	<i>1,007,377</i>	<i>1,013,741</i>	<i>95.0</i>	<i>74.1</i>	<i>65.1</i>

1) The original figures, expressed in number of eggs, have been converted to pounds on the basis of the coefficient: 7,260 eggs = 1,000 lbs.

at a higher figure than those of 1932 and 1931. In 1934 it kept its first place on the French market with exports amounting to 13,657,000 lb. and its considerable share of the Spanish market with 5,372,000 lb.

An examination of the 8 importing countries shows that all have reduced their purchases with the exception of Great Britain and Northern Ireland, which increased its imports by 2.2 % of the 1933 figure, and Switzerland, which maintained them at practically the same level as in the preceding year.

Germany shows the largest absolute reduction compared with 1933 with 17,453,000 lb. less, followed by France with 8,225,000 lb. less, and Spain with 7,423,000 lb. less, while the heaviest relative decline is shown by Austria with 25.5 % less than 1933.

Two countries, France and Italy, which, after being large exporters, have become considerable importers in recent years, still imported on balance in 1934 but they reduced their purchases as a result of restrictive measures.

France, as we have seen, increased its exports at the same time, which confirms, as is stated officially, that there was a plentiful production of eggs in this country in 1934.

Trade in eggs in the shell 1926-34: Italy and France.

(million pounds)

Years	Italy		France	
	Import	Export	Import	Export 1)
1934	18	2	26	2
1933	19	2	35	1
1932	77	9	28	2
1931	54	20	68	15
Average 1926-1930	35	29	24	51
1930	50	21	32	45
1929	36	23	32	57
1928	39	26	22	90
1927	34	31	18	30
1926	15	47	14	33

1) Including unsugared yolk for food purposes.

The first place among importers is still occupied by Great Britain and Northern Ireland, which took 47.3 % of the total imports of the 8 countries considered compared with 44.0 % in 1933. British imports underwent a large reduction of more than 98,000,000 lb. in 1932 on the imposition of an *ad valorem* duty of 10 % (March 1932) and other restrictions (November 1932). British imports may be said to have been maintained at practically the same level during the last two years, but, compared with 1932, they have fallen by about 23,000,000 lb.

The poultry industry of Great Britain and Northern Ireland has made considerable strides in recent years, egg production having risen from 3,300 million eggs in 1930 to 4,100 million in 1934, but the large quantities imported show that the

Imports of eggs in the shell into the United Kingdom, by origin.

(thousands of pounds)

Origin	1934		1933		1932		1931		1930	
	Absolute data	%	Absolute data	%	Absolute data	%	Absolute data	%	Absolute data	%
Denmark	105,553	34.0	103,071	33.9	105,695	32.0	124,815	29.1	111,252	25.3
Irish Free State	52,809	17.0	56,830	18.7	65,284	19.8	75,648	17.6	79,054	18.0
Australia	34,747	11.2	31,406	10.3	25,059	7.6	15,182	3.5	9,171	2.1
Poland (and Danzig)	32,130	10.3	27,793	9.2	30,991	9.4	44,430	10.4	59,733	13.6
China	23,773	7.7	23,093	7.6	14,055	4.3	24,756	5.8	28,317	6.4
Netherlands	15,622	5.0	16,582	5.5	23,198	7.0	63,481	14.8	60,859	13.9
Union of South Africa and South-West Africa Territory	1) 4,963	1.6	7,520	2.5	8,698	2.6	9,737	2.3	7,729	1.8
Belgo-Luxemburg Customs Union	818	0.3	7,432	2.4	26,187	7.9	34,275	8.0	38,586	8.8
Sweden	4,263	1.4	3,340	1.1	5,989	1.8	5,605	1.3	8,121	1.9
Other countries	35,934	11.5	26,718	8.8	25,450	7.6	30,737	7.2	36,030	8.2
Total . . .	310,612	100.0	303,785	100.0	330,606	100.0	428,666	100.0	438,852	100.0

1) The Union of South Africa only.

level of consumption remains high. The increase shown in 1934 over 1933 is made up mostly of the increases recorded by Poland, Australia and Denmark. It is worthy of note that the second and third places in British imports are occupied by Australia and the Irish Free State, which together supplied 28.2 % of the

Import of eggs in the shell into Germany, by origin.

(thousands of pounds)

Origin	1934		1933		1932		1931		1930	
	Absolute data	%	Absolute data	%	Absolute data	%	Absolute data	%	Absolute data	%
Netherlands	74,134	44.3	68,721	37.2	119,611	37.8	101,473	32.1	101,142	28.6
Denmark	32,696	19.5	30,946	16.7	43,648	13.8	18,932	6.0	16,806	4.8
Romania	10,008	6.0	13,620	7.4	33,538	10.6	29,060	9.2	37,568	10.6
Bulgaria	16,436	9.8	12,007	6.5	25,354	8.0	42,145	13.3	39,543	11.2
Finland	6,391	3.8	10,852	5.9	7,819	2.5	1,480	0.5	69	0.0
Yugoslavia	4,952	2.9	9,495	5.2	6,878	2.2	15,627	5.0	21,390	6.1
Belgo-Luxemburg Customs Union	8,071	4.8	9,067	4.9	34,734	11.0	15,158	4.8	26,353	7.5
Poland	804	0.5	8,134	4.4	5,227	1.7	8,421	2.7	24,957	7.0
Hungary	4,675	2.8	5,385	2.9	2,733	0.9	12,260	3.9	15,570	4.4
Sweden	2,443	1.5	4,036	2.2	4,353	1.4	2,377	0.8	3,314	0.9
U. S. S. R.	118	0.1	2,491	1.3	12,410	3.9	30,568	9.6	23,526	6.7
Lithuania	211	0.1	2,127	1.1	4,881	1.5	5,475	1.7	5,563	1.6
China	116	0.1	2,066	1.1	3,342	1.1	8,057	2.6	9,797	2.8
Other countries	6,425	3.8	5,986	3.2	11,409	3.6	24,521	7.8	27,623	7.8
Total . . .	167,480	100.0	184,933	100.0	315,937	100.0	315,554	100.0	353,221	100.0

imports of 1934. In 1934, the relative importance of Denmark as the chief supplier marked a record for the last five years, reaching 34.0 % of all egg imports into Great Britain and Northern Ireland. No country reduced its exports to Great Britain to such an extent as the Belgo-Luxemburg Union the exports of which fell from 38,586,000 lb. in 1930 to 7,432,000 lb. in 1933 and to 818,000 lb. in 1934.

A more even decline is noticeable in imports into Germany during the last five years, the decrease being from 353,221,000 lb. in 1930 to 167,480,000 lb. in 1934.

Notwithstanding the substantial reduction in German imports compared with 1933, three countries succeeding in increasing their supplies to Germany. These are the Netherlands, Denmark and Bulgaria. This, again, is the result of controlled and directed trade which facilitates imports from countries with which Germany maintains more active trade relations. This explains the reduction almost to zero of Germany's imports from China, trade with which has considerably decreased. China, however, was able to increase its shipments to Great Britain and Northern Ireland. This selective control is to be seen also in the fact that the Netherlands and Denmark taken together contributed 63.8 % in 1934 of the imports into Germany, against 33.4 % in 1930, 38.1 % in 1931, 51.6 % in 1932 and 53.9 in 1933.

The substantial fall in exports from Poland to Germany is to be attributed mainly to the fact that Germany, which also imposes minimum weights for imports, has hindered Polish egg imports which are of excellent quality but small in size.

Spain, the third largest importer, reduced its imports in 1934 by 8.9 % compared with 1933 and by 52.1 % compared with 1931. Though Turkey was the chief supplier of Spain from 1931 to 1933, the first place in 1934 was taken by the Belgo-Luxemburg Union with 18,899,000 lb. against 10,522,000 lb. supplied by Turkey. The new suppliers of the Spanish market which before 1932 did not export to this country (Bulgaria, Denmark, Uruguay and Argentina) exported in all 14,268,000 lb. To the number of countries which since 1933 have supplied Spain must be added also Romania, Yugoslavia and the Irish Free State.

The price of eggs on world markets continued to fall in 1934.

Prices of 1000 eggs imported in the United Kingdom.

	Gold francs
1934	48.62
1933	56.47
1932	68.31
1931	103.56
1930	129.69

The price of 1000 eggs imported into Great Britain and Northern Ireland may be taken as an index by the magnitude of the fall. This price has declined from 129.69 gold francs in 1930 to 56.47 in 1933 and to 48.62 in 1934. This great fall made it possible for Great Britain and Northern Ireland to import in 1934 a larger quantity of eggs than that imported in 1933 for a lower sum: 2,200 million eggs with a value of 124.5 million gold francs in 1933 and 2,250 million with a value of only 109.6 million gold francs in 1934.

The volume of world imports during the January March quarter of 1935 shows a further fall from the same quarter of 1934.

Import of eggs in the shell in first quarter of the years 1931 to 1935.

(thousands of pounds).

Countries	1935	1934	1933	1932	1931	% 1935		
						1934 = 100	1933 = 100	1932 = 100
Germany	34,537	42,551	70,714	66,254	66,150	81.2	48.8	52.1
Austria	2,294	4,290	5,631	4,938	5,823	53.5	40.7	46.5
Spain	14,680	21,499	7,293	9,239	10,027	68.3	201.3	158.9
France	5,008	10,104	11,713	5,331	14,695	...	...	...
United Kingdom	63,891	65,881	60,148	71,609	96,143	97.0	106.2	89.2
Italy	2,446	6,163	3,197	16,887	8,770	39.7	76.5	14.5
Switzerland	7,069	8,746	7,168	12,405	7,332	80.8	98.6	57.0
Czechoslovakia	1,424	1,171	1,981	2,865	2,147	121.6	71.9	47.9
Total . . .	...	160,405	167,865	189,528	211,087	...	...	...

1) January and February.

The decline in Great Britain and Northern Ireland is negligible, but that in Germany and Spain is considerable. The statistics of the first quarter cannot be used as a basis for forecasting the trend of trade during this year for the new commercial policies, one of the objects of which is to keep prices at a more even level during the different seasons of the year, may involve considerable modifications in the seasonal distribution of imports.

V. DESMIREANU.

Current information on livestock and derivatives.

Belgium: The state of health of animals is very good.

Irish Free State: Supplies of fodder and feeding stuffs were adequate for all normal requirements.

Milk yields were above the average for the season.

Great Britain and Northern Ireland: Cattle and sheep have done moderately well and milk yields are up to average for the time of year.

The lambing season in England and Wales, so far as lowland flocks are concerned, has been a favourable one. The fall of lambs has been good, and mortality amongst both ewes and lambs has been less than usual, except on the marshes of south-east England, where there have been considerable losses owing to bad weather conditions. Lambing was in progress in the hill flocks, but the conditions at the end of the month were not quite so good as they were for lowland sheep. There appears to be an average crop of healthy lambs.

Netherlands: As supplies of hay were becoming short, it was desirable to pasture animals early, but the unfavourable and cold weather made this impossible. The outlook, however, has improved recently.

Average milk production increased by 10 % in Friesland, by 7.5 % in Groningen, by 8 % in Geldern and by 5 % in North Brabant. Increases were also recorded in Drenthe (5 to 10 %) and Overijssel (up to 15 %). But the milk yield fell in the Utrecht area (up to 10 %) and, to some extent in South Holland. In the other provinces, milk production was about normal.

Switzerland: Average milk deliveries in March were 0.4 % smaller than those of March 1934. The decline is 1.9 % in German Switzerland while in French Switzerland there was an increase of 3.7 %. The decrease in deliveries was heaviest in the areas which experienced drought last year and in which there was a consequent scarcity of hay, namely, Thurgovia, Argovia, the cantons of Soleure and Berne, and the Bernese Jura. In other parts of the country there was a general and fairly considerable increase in deliveries. The deliveries in March this year were 26 % larger than those of March 1913.

Argentina: Animals are in good condition but pastures are thinly supplied.

United States: According to a report of the United States Department of Agriculture on the early lamb situation on 1 April, weather and feed conditions varied greatly during March among the different early lambing areas. In California and Arizona they continued exceptionally favourable; in the south-eastern States-Tennessee, Kentucky and Virginia – they improved considerably; in the north-western States – Idaho, Washington and Oregon – they were rather unfavourable; in the Corn Belt States they were about average; in Texas they continued very unfavourable. In general the development of the lambs to 1 April in the earlier areas – those from which the marketings will be in volume before the middle of May – was considerably above average, while in the later areas the development of the lambs was hardly up to average.

According to another report of the Department of Agriculture there was a decrease of about 36 % in the number of cattle on feed for market in the eleven Corn Belt States on 1 April this year compared with the number on the corresponding date in 1934. This decrease is equivalent to about half a million head. The number on feed on 1 April this year is the smallest for that date for many years. The decrease was general over the Corn Belt, with only two States – Ohio and Indiana – having a number larger than a year earlier. The States east of the Mississippi River as a whole, had an estimated decrease of about 6 % while those the west of the river had a decrease of about 42 %. The largest decreases were in the States west of the Missouri River.

Shipments of stocker and feeder cattle, inspected at stockyards markets, into the Corn Belt States for the three months January to March of this year were about 15 %

larger than for the corresponding period of 1934 and the largest for the period since 1931. While the greatest increases were in shipments into the Eastern Corn Belt the movement into all the Western Corn Belt States, except Kansas, was larger than last year and into some of these States was quite large relative to the feed supplies available. Apparently most of these cattle were for stocker purposes and not for immediate feeding. For the nine months, July 1934 to March 1935 the inspected shipments of stocker and feeder cattle into the Corn Belt were but little different from those of the corresponding period a year earlier, but were smaller than in any other similar period in the 16 years for which records are available.

Algeria: Animals in Algiers and Constantine were in satisfactory condition at the end of April but those in Algiers were beginning to suffer from drought and the sheep in Algero-Moroccan herds were of mediocre quality. Supplies of fodder for the summer are average in eastern and central districts but very low in the west.

French Morocco: The condition of animals at the end of April was still fairly satisfactory in spite of the drought. The level of water courses was, however, falling rapidly and that of the water table was slightly lower. Growth on grazing lands was clearly insufficient and the feeding of animals was becoming difficult, particularly for the natives. Supplies for the summer will be still smaller owing to the poor straw harvest to be expected from the present condition of cereals.

TRADE

COUNTRIES	MARCH				EIGHT MONTHS (August 1-March 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1935	1934	1935	1934	1934-35	1933-34	1934-35	1933-34	1933-34	1933-34
Wheat. — Thousand cents (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Bulgaria	0	529	0	0	0	2,105	0	0	2,242	0
Hungary	840	2,194	0	0	4,502	12,306	0	0	15,496	0
Lithuania	137	0	0	0	293	0	0	0	0	0
Poland	75	75	0	4	390	295	9	507	1,596	507
Romania	0	0	0	2	0	137	4	9	141	11
Yugoslavia	291	53	0	0	2,167	262	2	0	553	0
U. S. S. R.	...	...	...	...	1,179	15,781	...	...	19,271	...
Canada	5,344	6,063	0	0	67,025	69,560	...	...	101,960	7
United States	29	1,839	1,290	688	1,356	8,012	10,997	4,608	11,995	6,757
Argentina	10,302	10,053	...	...	73,672	51,258	...	...	84,074	...
Chile	33	55	0	0	580	121	55	765	582	765
Syria and Lebanon	2	11	0	24	216	403	...	150	423	198
Algeria	474	646	29	2	4,974	4,866	223	231	6,493	340
French Morocco	214	119	0	0	2,423	3,435	...	0	5,082	0
Tunisia	117	15	7	137	988	582	172	1,023	1,122	1,122
Australia	4,550	2,787	0	0	31,416	25,179	0	0	36,090	0
New Zealand	...	...	...	...	181	181	7	66	181	119
<i>Importing Countries:</i>										
Germany	0	410	527	1,325	117	10,225	6,038	11,131	12,516	17,163
Austria	0	0	370	346	0	0	2,632	2,632	0	4,866
Belgium	205	203	2,438	3,115	1,446	928	18,713	18,356	1,459	26,226
Denmark	0	0	1,069	443	31	9	8,415	4,643	9	6,764
Spain	0	0	0	0	0	0	0	0	0	0
Estonia	0	0	0	0	75	0	0	0	0	0
Irish Free State	0	0	1,173	1,193	0	0	6,158	6,464	0	10,280
Finland	0	0	57	88	0	0	712	686	0	1,098
France	1,651	0	913	1,453	13,387	1,327	10,540	12,249	1,905	16,493
Gr. Brit. and N. Irel.	73	42	10,110	11,252	531	335	73,053	79,285	754	120,064
Greece	...	...	...	...	1	1	3,598	4,094	0	6,285
Italy	0	0	926	1,171	9	7	6,532	6,316	7	9,908
Latvia	...	...	...	...	60	0	0	0	0	0
Norway	0	0	187	269	0	0	2,480	2,235	0	3,761
Netherlands	18	146	1,124	1,003	24	701	7,871	9,508	1,303	13,649
Portugal	...	...	0	57	...	...	108	247	...	884
Sweden	265	0	77	423	2	2	666	772	375	1,089
Switzerland	0	0	633	631	2	4	6,636	7,079	7	10,558
Czechoslovakia	0	0	68	0	2	2	472	84	4	88
Ceylon	...	...	4	0	...	...	9	4	...	...
China	24	18	1,874	1,385	236	95	4,788	6,918	185	11,200
India	2	2	0	0	234	33	99	99	44	165
Japan	...	...	1,199	979	...	...	7,242	6,471	...	9,811
Egypt	...	...	...	...	24	7	591	2	9	7
Union of South Afr.	...	...	...	...	2	0	518	20	0	33
Totals	24,646	25,260	24,075	25,653	207,784	208,158	179,351	186,661	305,880	279,722
Rye. — Thousand cents (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Germany	0	573	721	71	51	5,908	3,889	2,088	6,945	2,196
Bulgaria	0	2	0	0	0	15	0	0	18	0
Estonia	0	0	0	0	494	0	22	0	0	0
Hungary	37	637	0	0	573	2,617	0	0	3,455	0
Latvia	...	...	...	...	1,702	0	0	0	0	0
Lithuania	269	0	0	0	765	49	0	0	49	0
Poland	1,592	745	0	0	7,846	7,048	0	229	10,479	229
Romania	0	0	0	0	0	0	0	0	0	0
Sweden	66	0	2	2	1,687	0	18	22	42	31
U. S. S. R.	...	...	...	...	531	1,656	...	...	3,397	...
Canada	9	0	0	0	395	1,426	11	0	1,444	0
Argentina	1,389	183	...	...	4,286	1,534	...	...	2,178	...
Algeria	...	...	...	...	24	15	0	0	22	0
<i>Importing Countries:</i>										
Austria	0	0	249	0	0	0	1,393	2	0	172
Belgium	4	0	29	300	9	11	1,113	3,801	11	4,804
Denmark	0	0	309	269	2	0	2,661	2,374	0	5,895
Finland	0	0	9	110	0	0	95	679	0	1,173
France	0	0	0	0	2	0	31	71	0	71
Italy	0	0	24	9	0	0	90	88	0	126
Norway	0	0	247	207	0	0	1,656	1,958	0	3,201
Netherlands	0	0	282	289	227	7	1,027	3,230	7	5,110
Switzerland	0	0	24	7	0	0	99	97	0	137
Czechoslovakia	0	0	0	2	4	15	13	13	18	20
United States	0	2	904	97	0	7	3,616	4,526	9	7,055
Total	3,366	2,142	2,800	1,363	18,598	20,308	15,734	19,178	28,074	30,220

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COUNTRIES	MARCH				EIGHT MONTHS (August 1-March 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1935	1934	1935	1934	1934-35	1935-34	1934-35	1933-34	1933-34	1933-34
Wheat flour. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Germany	2	542	0	2	562	3,779	71	46	5,578	55
Bulgaria	0	7	0	0	0	82	0	0	93	0
Spain	0	0	0	0	0	29	0	0	31	0
France	227	287	106	77	3,234	2,864	1,098	602	4,149	937
Hungary	44	90	0	0	509	1,052	0	0	1,466	0
Italy	366	262	13	20	2,930	2,557	79	262	3,849	320
Lithuania	0	0	0	0	0	22	0	0	22	0
Poland	37	46	0	0	287	176	0	0	282	0
Romania	0	0	0	0	0	7	0	0	7	0
Yugoslavia	2	7	0	0	26	42	0	0	55	0
Canada	974	968	20	20	6,400	7,414	267	75	10,690	176
United States	622	697	0	0	5,540	5,269	2	0	7,584	2
Argentina	172	269	—	—	1,477	1,620	—	—	2,425	—
Chile	0	4	4	15	42	11	42	37	22	55
India	31	31	0	2	196	194	2	2	260	2
Japan	659	423	2	2	4,736	3,962	13	20	5,569	22
Algeria	99	75	0	11	648	540	46	62	897	101
French Morocco	9	0	0	2	29	49	0	7	49	9
Tunisia	31	15	15	51	478	134	55	126	223	249
Australia	1,409	990	0	0	9,606	7,445	2	0	10,922	0
<i>Importing Countries:</i>										
Austria	0	0	75	60	0	0	417	527	0	992
Belgium	2	2	18	24	26	29	126	231	42	287
Denmark	2	0	49	26	13	9	335	410	13	584
Estonia	0	0	0	0	0	0	0	0	0	0
Irish Free State	0	0	84	68	0	0	450	904	0	1,091
Finland	0	0	66	79	0	0	556	717	0	1,146
Gr. Brit. and N. Irel.	243	273	692	849	2,264	2,185	6,124	7,692	3,245	11,674
Greece	—	—	—	—	—	—	20	9	0	13
Norway	—	—	51	71	—	—	659	597	4	930
Netherlands	—	—	68	71	—	—	4	626	7	880
Portugal	—	—	13	9	—	—	73	90	—	143
Sweden	—	—	0	0	—	—	2	4	—	4
Czechoslovakia	—	—	0	0	—	—	13	15	—	22
Ceylon	—	—	49	29	—	—	295	260	—	386
China	—	—	75	71	—	—	1,144	1,034	165	1,314
Indo-China	—	—	—	—	—	—	218	201	—	337
Java and Madura	—	—	—	—	—	—	683	650	—	1,087
Syria and Lebanon	13	4	33	112	—	—	71	551	77	888
Egypt	—	—	—	—	—	—	49	62	—	99
Union of South Afr.	—	—	—	—	—	—	7	4	—	9
New Zealand	—	—	—	—	—	—	110	106	—	209
Totals	4,944	4,992	1,433	1,671	39,114	39,637	13,626	15,929	57,737	24,023
Barley. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Bulgaria	0	95	0	0	0	408	0	0	522	0
Spain	0	0	0	0	0	44	0	0	44	0
Hungary	7	42	0	0	82	959	24	0	1,093	0
Poland	324	381	0	0	6,135	2,835	0	0	3,538	0
Romania	99	681	0	0	3,527	12,017	0	4	14,654	4
Czechoslovakia	51	115	0	0	972	1,019	2	2	1,116	2
Yugoslavia	33	13	0	0	492	161	0	0	176	0
U. S. S. R.	—	—	—	—	2,705	9,493	—	—	10,796	—
Canada	108	44	0	0	5,421	483	0	0	820	0
United States	62	331	112	0	1,761	2,037	3,715	13	2,531	152
Argentina	1,345	1,854	—	—	7,540	7,496	—	—	11,605	—
Chile	205	93	0	0	1,067	807	0	0	2,006	0
India	2	0	0	15	315	2	9	84	2	95
Algeria	33	201	62	0	1,113	948	591	441	1,144	496
Egypt	—	—	—	—	—	—	123	11	0	139
French Morocco	487	18	0	0	4,881	1,812	0	0	2,628	0
Australia	187	119	0	0	1,217	1,012	0	0	1,407	0
<i>Importing Countries:</i>										
Germany	0	0	505	765	0	2	9,041	4,987	2	7,648
Austria	0	0	95	421	0	0	1,250	1,534	0	2,588
Belgium	18	53	880	681	333	439	6,546	6,795	655	8,962
Denmark	35	161	29	108	1,373	798	703	939	977	1,314
Irish Free State	0	0	4	2	4	11	165	71	11	212
France	0	0	284	159	2	0	2,972	3,080	0	3,915
Gr. Brit. and N. Irel.	2	0	1,191	1,900	7	9	10,840	16,180	26	20,322
Greece	—	—	—	—	—	—	13	2	0	4
Italy	0	0	179	128	0	0	1,206	683	0	1,124
Norway	0	0	7	29	2	0	141	278	0	293
Netherlands	11	4	939	871	181	18	4,414	8,208	26	11,543
Switzerland	0	0	220	141	0	0	2,035	1,616	0	2,412
Syria and Lebanon	9	2	0	4	106	60	35	207	79	216
Spain	2	0	40	174	26	60	1,001	463	84	602
Totals	3,020	4,207	4,547	5,398	39,262	43,053	44,714	45,587	56,081	61,904

COUNTRIES	MARCH				EIGHT MONTHS (August 1-March 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1935	1934	1935	1934	1934-35	1933-34	1934-35	1933-34	1933-34	1933-34
Oats. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Irish Free State . . .	0	0	0	0	0	20	0	0	20	0
Hungary	0	33	0	0	0	750	0	0	761	0
Lithuania	57	0	0	0	128	2	0	0	2	0
Poland	139	4	0	0	728	73	0	0	304	0
Romania	0	0	0	0	0	505	0	0	505	0
Czechoslovakia . . .	0	35	0	0	2	622	2	0	741	0
Yugoslavia	2	0	0	0	229	40	0	0	112	0
Canada	251	295	0	2	3,439	1,133	0	2	2,070	2
United States	4	7	831	0	26	106	3,631	18	123	71
Argentina	1,426	657	—	—	11,497	4,559	—	—	7,053	—
Chile	335	13	0	0	864	540	0	0	1,530	0
Tunisia	7	2	0	0	337	18	0	4	86	22
Australia	22	2	0	0	218	18	2	0	33	2
<i>Importing Countries:</i>										
Germany	0	128	833	4	11	1,887	3,128	84	1,931	97
Austria	0	0	13	24	0	0	84	139	0	450
Belgium	0	0	53	9	0	0	126	55	0	390
Denmark	24	0	119	29	655	26	672	258	26	373
Estonia	0	0	0	0	15	0	0	0	0	0
Finland	0	2	0	35	0	9	11	388	9	549
France	13	2	51	13	29	7	276	185	179	238
Gr. Brit. and N. Irel.	2	4	401	280	11	13	2,046	4,021	20	4,894
Italy	0	0	489	236	0	0	3,329	1,466	0	2,811
Latvia . . . . .	...	...	...	...	1)	0	1)	2	0	2
Norway	0	2	0	2	0	2	2	2	4	2
Netherlands	2	2	64	134	7	20	474	776	20	1,142
Sweden	4	2	9	33	35	9	24	783	9	915
Switzerland	0	0	401	657	0	0	3,040	3,146	0	4,780
Algeria	18	2	4	11	119	51	86	112	64	282
Totals	2,306	1,192	3,268	1,469	18,350	10,410	16,933	11,441	15,602	17,022
Maize. — Thousand centals (1 cental = 100 lb.).										
COUNTRIES	MARCH				FIVE MONTHS (November 1-March 31)				TWELVE MONTHS (Nov.-Oct. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1935	1934	1935	1934	1934-35	1933-34	1934-35	1933-34	1933-34	1933-34
<i>Exporting Countries:</i>										
Bulgaria	0	474	0	0	390	800	0	0	2,564	0
Hungary	31	60	2	0	84	758	2	0	1,056	0
Romania	441	1,874	0	0	4,173	4,519	0	0	10,115	2
Yugoslavia	1,301	1,773	0	0	7,273	5,159	0	0	11,810	2
United States	11	115	1,850	9	203	1,195	4,844	53	2,401	763
Argentina	4,403	3,298	—	—	37,082	47,975	—	—	127,357	—
Java and Madura . . .	...	...	—	—	1)	635	1)	653	—	924
Indo-China . . . . .	...	...	—	—	1)	4,370	1)	2,141	—	8,439
Syria and Lebanon . .	0	0	0	15	0	0	0	22	0	66
Egypt . . . . .	...	...	...	...	1)	0	1)	11	4	20
Union of South Afr.	1,175	0	...	...	4,178	0	1)	165	3,693	432
<i>Importing Countries:</i>										
Germany	0	0	842	778	0	0	4,599	2,668	0	7,452
Austria	0	0	560	913	0	2	4,544	4,281	2	10,448
Belgium	24	40	1,182	1,096	302	309	6,277	6,506	822	16,824
Denmark	0	0	73	441	0	0	1,731	1,845	0	4,586
Spain	0	0	112	11	0	0	414	741	0	1,916
Irish Free State . . .	0	0	465	529	0	0	2,264	2,057	0	6,543
Finland	0	0	53	260	0	0	203	836	0	1,312
France	0	4	1,475	1,318	2	18	8,360	7,024	22	13,607
Gr. Brit. and N. Irel.	190	139	3,902	5,456	853	703	26,625	29,756	2,116	66,597
Greece . . . . .	...	...	...	...	1)	0	1)	207	19	37
Italy	0	0	190	108	0	0	694	919	0	3,874
Norway	0	0	165	406	0	0	831	1,371	0	3,084
Netherlands	0	0	1,660	2,341	0	7	8,792	10,077	13	22,011
Poland	0	0	13	0	0	0	0	33	0	60
Portugal	—	—	44	112	—	—	353	606	—	1,669
Sweden	0	0	53	395	0	0	227	2,119	0	3,106
Switzerland	0	0	130	298	0	0	774	851	0	1,792
Czechoslovakia . . .	0	0	238	421	0	0	1,019	1,587	0	5,150
Canada	0	0	159	265	0	0	1,936	1,572	2	4,090
Japan	—	—	0	0	—	—	2	2	—	2
Tunisia	0	0	9	68	0	0	55	73	4	101
Totals	7,576	7,777	13,164	15,253	59,547	64,241	74,764	75,186	171,344	175,546

1) See notes page 394.

COUNTRIES	MARCH				THREE MONTHS (January 1-March 31)				TWELVE MONTHS (January 1-Dec. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1935	1934	1935	1934	1935	1934	1935	1934	1934	1934
Rice. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Spain	194	44	0	0	278	106	0	0	1,010	0
Italy	139	295	15	2	902	891	24	7	3,598	44
United States	29	148	86	37	154	348	368	77	917	558
Brazil	...	...	—	—	44	7	—	—	734	—
India	7,604	5,097	756	520	14,337	9,590	1,376	1,409	31,244	8,858
Indo-China	...	...	—	—	5,930	5,179	—	—	28,462	—
Siam	2,848	4,191	—	—	9,954	10,071	—	—	43,202	—
Egypt	...	...	...	...	159	489	13	2	1,508	9
<i>Importing Countries:</i>										
Germany	24	26	326	364	93	71	1,054	1,087	745	6,341
Austria	0	0	62	55	0	0	174	157	0	633
Belgium	4	13	53	75	11	35	183	276	97	1,446
Denmark	0	0	26	18	0	0	37	33	0	137
Estonia	—	—	2	0	—	—	2	4	—	15
Irish Free State	0	0	7	7	0	0	11	11	0	57
France	115	84	800	1,274	212	229	2,967	2,590	661	14,171
Gr. Brit. and N. Irel.	22	11	203	249	49	37	388	527	174	2,862
Greece	...	...	...	...	1	1	97	84	0	313
Hungary	0	0	44	77	0	0	99	148	0	448
Latvia	...	...	...	...	1	1	2	0	0	11
Lithuania	0	0	0	0	0	0	2	4	0	15
Norway	0	0	4	11	0	0	20	26	0	106
Netherlands	146	152	106	291	518	298	322	417	2,013	3,629
Poland	2	7	20	0	18	29	24	2	157	974
Portugal	—	—	13	24	—	—	42	141	—	575
Sweden	0	0	9	2	0	0	29	99	—	223
Switzerland	0	0	37	40	0	0	108	99	0	397
Czechoslovakia	0	0	53	57	0	0	190	123	0	1,497
Yugoslavia	0	0	44	18	0	0	101	93	0	439
Canada	0	0	31	95	0	0	75	168	—	732
Chile	—	—	18	11	—	—	55	66	4	340
Ceylon	0	0	1,204	957	0	0	3,199	2,844	—	10,977
China	15	20	4,328	1,631	33	60	9,526	3,316	150	17,000
Java and Madura	...	...	...	...	2	18	1,709	46	132	1,356
Japan	165	209	75	9	185	406	77	42	1,457	152
Syria and Lebanon	0	0	22	53	0	0	90	101	0	428
Algeria	0	2	11	53	0	2	60	104	9	57
Tunisia	0	0	7	11	0	0	13	18	0	1,184
Union of South Afr.	...	...	...	...	1	1	134	130	244	49
Australia	18	15	7	2	46	40	13	24	0	73
New Zealand	...	...	...	...	0	0	7	9	0	73
Totals	11,325	10,314	8,369	5,943	32,925	27,906	22,591	14,187	116,522	76,462
Linseed. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Lithuania	13	2	0	0	55	42	0	0	141	0
Argentina	3,635	4,028	—	—	13,823	12,194	—	—	30,300	—
India	82	214	0	0	214	1,052	0	0	6,175	0
Tunisia	0	0	0	0	0	0	0	0	0	2
<i>Importing Countries:</i>										
Germany	0	0	342	1,124	0	0	1,005	2,330	2	6,986
Belgium	29	20	403	185	53	35	882	685	68	1,790
Denmark	—	—	31	26	—	—	121	79	—	359
Spain	—	—	26	24	—	—	97	64	—	366
Estonia	0	0	4	4	2	2	0	4	15	4
Finland	0	0	11	9	0	0	20	29	0	104
France	0	0	1,016	1,001	2	2	1,660	1,755	7	5,243
Gr. Brit. and N. Irel.	0	0	573	622	0	0	1,561	1,501	15	4,123
Greece	...	...	...	...	1	1	7	18	0	112
Hungary	0	0	...	...	2	2	0	0	13	0
Italy	0	0	143	119	0	0	377	328	0	1,422
Latvia	...	...	...	...	26	22	18	15	79	86
Norway	0	0	62	90	0	0	132	148	0	337
Netherlands	18	22	1,235	816	49	37	3,265	1,942	77	7,108
Poland	0	0	0	0	0	0	0	0	0	170
Sweden	—	—	119	35	—	—	185	139	—	849
Czechoslovakia	0	0	22	62	0	0	42	117	0	556
Yugoslavia	0	0	20	37	0	0	42	55	0	139
Canada	2	—	73	22	4	2	73	44	4	443
United States	—	—	1,102	946	—	—	2,652	2,377	—	7,934
Japan	2	0	35	51	2	0	108	141	2	434
Australia	0	0	194	20	0	0	229	40	0	560
Totals	3,781	4,286	5,407	5,193	14,232	13,390	12,476	11,809	36,898	39,127

COUNTRIES	MARCH				THREE MONTHS (January 1-March 31)				TWELVE MONTHS (January 1-Dec. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1935	1934	1935	1934	1935	1934	1935	1934	1934	1934
Butter. — (Thousand lb.).										
<i>Exporting Countries:</i>										
Austria	302	397	2	4	906	1,541	4	9	7,053	157
Denmark	24,998	26,429	13	0	70,605	75,612	26	11	330,311	20
Estonia	999	950	0	0	3,058	2,795	0	0	22,306	0
Irish Free State	309	1,274	0	0	1,667	2,332	2	46	56,886	84
Finland	2,189	1,594	0	2	5,970	5,393	0	13	24,467	13
Hungary	185	611	0	0	1,122	2,487	0	0	8,790	0
Latvia	—	—	—	—	3,472	3,616	—	—	34,615	0
Lithuania	946	886	0	0	2,621	2,202	0	0	21,321	0
Norway	11	51	0	0	247	342	0	2	547	2
Netherlands	7,094	6,327	26	29	16,665	13,944	218	71	81,320	1,173
Poland	146	190	0	0	589	701	0	0	9,782	9
Sweden	3,602	4,154	0	0	11,365	12,538	0	2	51,152	4
U. S. S. R.	—	—	—	—	—	—	—	—	70,689	—
Argentina	1,761	902	—	—	7,465	6,682	—	—	18,547	—
India	20	20	57	60	55	55	192	146	209	642
Syria and Lebanon	26	13	26	55	62	29	104	212	293	809
Australia	27,609	22,300	0	0	107,954	80,451	2	0	246,784	2
New Zealand	35,787	20,739	—	—	103,629	93,908	—	—	292,830	—
<i>Importing Countries:</i>										
Germany	0	0	15,379	9,537	2	4	45,179	24,187	9	136,165
Belgium	4	7	1,100	1,861	13	26	6,263	8,232	108	20,629
Spain	0	0	—	2	2	55	—	9	15	143
France	653	569	115	2,427	1,647	1,574	315	6,803	7,297	9,603
Gr. Brit. and N. Irel.	1,047	2,692	100,170	105,269	16,737	5,684	262,512	294,523	12,635	1,086,713
Greece	—	—	—	—	—	—	—	—	—	690
Italy	24	26	88	357	49	60	340	2,476	276	3,799
Switzerland	0	0	13	22	0	0	37	540	0	653
Czechoslovakia	0	0	293	0	0	22	467	66	22	2,229
Canada	26	24	13	1,587	93	75	26	2,022	428	2,873
United States	62	185	4,930	44	192	509	8,525	163	1,321	1,107
Ceylon	—	—	66	46	—	—	220	161	—	681
Java and Madura	—	—	—	—	—	—	1,579	1,878	—	10,313
Japan	—	—	2	9	—	—	9	20	—	64
Algeria	—	—	—	—	—	—	752	818	7	4,791
Egypt	—	—	—	—	—	—	179	123	82	789
Tunisia	4	0	243	130	7	0	655	739	22	2,114
Totals	107,804	90,340	122,547	121,441	346,211	312,597	327,760	343,314	1,299,924	1,286,271
Cheese. — (Thousand lb.).										
<i>Exporting Countries:</i>										
Bulgaria	362	55	0	0	985	229	0	0	2,652	0
Denmark	1,351	1,391	2	4	3,371	3,547	7	13	13,891	73
Finland	778	368	2	0	2,306	1,285	2	7	8,523	40
Italy	4,566	5,490	926	717	13,186	13,298	2,218	1,997	55,283	10,190
Lithuania	399	79	0	0	408	496	0	0	2,200	2
Norway	190	309	29	22	703	886	66	44	4,418	214
Netherlands	9,773	10,587	82	86	31,101	29,066	198	238	134,892	1,455
Poland	2	130	15	62	498	337	66	130	3,926	531
Switzerland	2,701	3,300	291	470	8,536	8,891	805	1,426	39,143	5,353
Czechoslovakia	73	106	212	185	256	209	549	586	1,995	2,628
Yugoslavia	29	51	4	4	293	315	11	13	4,045	57
Canada	366	448	79	53	966	1,920	203	183	61,167	946
Australia	2,090	604	4	7	6,568	3,104	13	15	12,467	77
New Zealand	20,122	21,843	—	—	64,915	70,145	0	0	222,266	2
<i>Importing Countries:</i>										
Germany	88	214	4,279	4,919	298	661	14,976	17,699	2,114	74,488
Austria	465	395	176	150	1,625	809	348	306	3,860	1,720
Belgium	15	18	3,624	3,353	51	77	10,948	10,640	353	47,818
Spain	4	13	207	198	20	29	553	463	123	2,482
Irish Free State	26	4	4	4	73	60	22	13	514	64
France	2,191	2,302	2,749	2,220	6,711	7,280	6,829	6,294	25,973	35,173
Gr. Brit. and N. Irel.	520	472	26,400	33,032	1,433	1,345	84,320	94,224	5,968	334,718
Greece	—	—	—	—	—	—	—	—	—	295
Hungary	9	4	0	0	95	33	223	20	1,144	0
Portugal	—	—	—	—	20	35	—	—	176	—
Sweden	—	—	26	22	—	—	75	57	—	525
United States	121	132	4,220	4,755	324	357	11,879	11,480	1,512	12,438
India	0	0	82	79	0	0	317	247	2	1,135
Java and Madura	—	—	—	—	—	—	229	216	—	1,656
Syria and Lebanon	15	0	112	154	53	18	309	344	534	1,221
Algeria	9	11	981	886	31	31	2,899	2,886	117	11,288
Egypt	—	—	—	—	—	—	—	—	126	6,537
Tunisia	—	15	192	231	15	31	666	730	86	2,989
Totals	46,269	48,341	44,793	51,601	144,848	144,807	141,956	151,563	609,470	592,427

1) 2) 4) See notes page 394.

COUNTRIES	MARCH				EIGHT MONTHS (August 1-March 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1935	1934	1935	1934	1934-35	1933-34	1934-35	1933-34	1933-34	1933-34
Cotton. — Thousand cents (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
United States	1,795	3,023	49	93	19,593	33,041	373	507	40,971	747
Argentina	7	4	—	—	331	170	—	—	450	—
Brazil	—	—	—	—	1,947	368	—	—	1,305	—
India	1,532	2,002	278	88	8,807	6,799	908	525	12,791	972
Egypt	—	—	—	—	5,141	5,864	—	—	8,927	—
<i>Importing Countries:</i>										
Germany	73	84	562	928	659	895	3,834	6,568	1,235	9,539
Austria	0	0	60	49	4	0	454	445	2	666
Belgium	64	57	168	190	476	381	1,358	1,224	553	1,768
Denmark	—	—	11	11	—	—	123	126	—	190
Spain	7	7	269	357	42	20	1,398	1,656	35	2,698
Estonia	0	0	9	7	0	0	77	60	0	88
Finland	0	0	13	15	4	0	216	172	2	249
France	49	40	538	615	441	267	3,364	5,531	423	7,101
Gr. Brit. and N. Irel.	51	75	917	1,194	487	419	7,952	10,406	606	14,266
Greece	—	—	—	—	73	0	73	84	0	163
Hungary	0	0	35	37	0	0	333	331	0	509
Italy	0	0	425	600	2	7	2,637	3,536	7	4,716
Latvia	—	—	—	—	0	0	68	66	0	108
Norway	0	0	7	4	0	0	42	35	0	53
Netherlands	0	0	77	108	7	7	571	675	7	988
Poland	0	0	108	134	7	4	939	1,045	4	1,519
Portugal	—	—	31	51	—	—	313	337	—	498
Sweden	—	—	37	40	—	—	434	439	—	661
Switzerland	0	0	46	53	0	0	384	414	0	597
Czechoslovakia . .	4	7	139	185	53	62	1,071	1,292	97	1,845
Yugoslavia	0	0	18	44	0	0	212	187	0	289
Canada	—	—	112	143	—	—	915	1,036	—	1,506
China	32	18	90	331	328	661	946	1,825	847	2,835
Japan	46	22	1,585	1,859	344	172	12,313	9,833	384	17,163
Algeria	0	0	0	0	2	2	2	9	2	11
Totals	3,650	5,339	5,584	7,126	37,672	49,139	41,310	48,364	68,648	71,745

Wool. = (Thousand lb.).

COUNTRIES	MARCH				EIGHT MONTHS (August 1-March 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1935	1934	1935	1934	1934-35	1933-34	1934-35	1933-34	1933-34	1933-34
Wool. = (Thousand lb.).										
<i>Exporting Countries:</i>										
Irish Free State . .	690	1,182	64	24	6,951	12,987	514	366	16,810	697
Hungary	37	90	231	192	1,329	974	2,231	1,365	6,270	2,286
Argentina	41,449	23,822	—	—	161,829	194,409	—	—	260,459	—
Chile	2,928	1,585	—	—	15,995	11,034	—	—	15,959	—
India	463	8,168	0	0	10,922	22,214	75	0	27,174	4
Syria and Lebanon .	5,181	7,220	675	670	25,536	40,627	3,538	2,227	54,798	4,072
Algeria	11	582	0	2	4,416	3,034	77	304	4,799	324
Egypt	637	622	126	132	4,171	4,742	1,272	1,089	9,270	2,350
Un. of S. Africa . .	36,264	24,154	—	—	880	1,422	13	35	2,721	57
Australia	1,019	736	—	—	158,802	186,379	0	0	228,426	0
New Zealand	92,683	70,718	287	1,067	4,449	4,235	639	743	6,228	1,519
Italy	1,365	6,197	0	33	585,426	634,717	2,233	4,317	703,392	7,035
Japan	34,216	55,045	—	—	39,029	47,439	90	302	65,852	342
Greece	7,264	6,506	—	—	103,302	163,716	2	2	228,155	0
<i>Importing Countries:</i>										
Germany	134	84	26,165	35,971	21,008	22,112	106,971	172,605	2,899	285,918
Austria	86	478	7,015	6,574	—	—	32,673	43,120	5,935	62,340
Belgium	37	42	1,563	1,477	—	—	10,104	13,250	688	18,045
Denmark	9,301	7,315	21,749	18,201	56,855	62,962	114,114	120,148	96,175	173,077
Spain	1,942	1,585	245	291	10,633	19,277	1,933	4,120	24,134	5,463
Finland	11	11	373	509	240	154	3,003	3,508	225	5,031
France	397	256	1,938	494	1,856	3,433	4,614	2,870	4,367	7,132
Gr. Brit. and N. Irel.	29	0	516	694	205	11	3,142	3,441	42	5,615
Greece	3,314	4,068	29,236	40,539	25,042	35,413	183,844	236,261	51,035	374,902
Italy	28,385	40,080	93,029	94,746	161,668	224,076	443,829	572,020	356,872	843,540
Japan	—	—	—	—	346	653	3,003	1,627	1,369	4,612
Netherlands	0	130	17,791	17,399	507	48	39,143	78,798	1,243	142,633
Poland	86	403	1,579	1,664	1,113	2,668	6,986	12,513	4,092	21,129
Sweden	132	247	148	251	869	1,144	1,213	1,442	1,779	2,332
Switzerland	46	231	862	758	2,410	3,662	3,951	5,895	4,482	9,081
Czechoslovakia . .	68	101	728	520	1,131	1,078	4,467	5,071	1,398	6,570
Yugoslavia	4	26	2,809	5,284	79	657	15,468	24,954	745	38,111
Canada	—	—	2,668	2,668	—	—	11,233	15,144	—	22,882
United States . . .	33	13	1,140	1,598	139	201	11,945	11,636	247	20,130
Algeria	82	170	2,844	3,717	1,116	1,325	16,477	21,623	2,507	35,285
Japan	117	26	1,096	509	853	172	4,211	3,115	320	6,267
Greece	245	37	866	718	3,799	6,934	5,309	11,790	8,155	18,495
Italy	381	1,036	13,940	16,976	1,314	3,750	60,943	112,341	4,405	156,050
France	0	26	14,187	20,763	71	115	109,325	198,850	381	202,370
Spain	18	31	24	20	459	295	172	249	996	377
Totals	274,055	263,051	243,164	276,461	1,422,029	1,724,550	1,208,777	1,627,141	2,251,924	2,486,081

COUNTRIES	MARCH		NINE MONTHS (July 1-March 31)		TWELVE MONTHS (July 1-June 30)	COUNTRIES	MARCH		NINE MONTHS (July 1-March 31)		TWELVE MONTHS (July 1-June 30)
	1935	1934	1934-35	1933-34	1933-34		1935	1934	1934-35	1933-34	1933-34
Coffee. — (Thousand lb.).						Tea. — (Thousand lb.).					
EXPORTS.						EXPORTS.					
<i>Exporting Countries:</i>						<i>Exporting Countries:</i>					
Brazil . . . . .	...	...	¹⁾ 1,004,681	¹⁾ 1,335,955	2,097,337	Ceylon	17,880	17,514	147,801	138,288	210,494
India	3,699	4,275	8,823	13,849	20,565	China	1,896	3,104	71,701	73,976	104,153
Java and Madura . . . . .	...	...	¹⁾ 48,696	¹⁾ 45,490	64,360	India	13,219	9,908	295,636	284,245	311,611
<i>Importing Countries:</i>						Java and Madura . . . . .	...	¹⁾ 75,956	¹⁾ 67,250	107,044	107,044
Germany	0	13	66	190	234	Japan	1,775	2,915	24,902	27,695	31,720
Belgium	13	13	101	190	284	<i>Importing Countries:</i>					
France	0	0	7	57	71	Belgium	0	0	7	4	9
Gr. Britain and N. Ireland	2,370	5,148	14,575	26,138	33,217	Irish Free State	2	2	254	29	159
Netherlands	1,008	2,099	9,339	13,298	18,470	France	2	4	22	26	40
Portugal	225	258	2,019	2,097	3,278	Gr. Britain and N. Irel.	7,438	8,730	50,784	63,652	78,736
Switzerland	11	18	551	256	351	Netherlands	11	15	93	104	146
Canada	7	4	68	37	57	United States	75	42	567	421	1,706
United States	1,790	2,108	12,134	21,960	25,212	Syria and Lebanon	0	0	9	0	2
Ceylon	0	0	2	4	7	Algeria	2	9	93	40	57
Syria and Lebanon	0	0	0	2	2	Union of S. Africa . . . . .	...	¹⁾ 22	¹⁾ 11	18	18
Australia	2	4	35	29	40	Australia	86	51	648	805	928
Totals	—	—	—	—	2,263,485	New Zealand . . . . .	...	¹⁾ 57	¹⁾ 66	106	106
IMPORTS.						Totals	42,386	42,294	668,552	656,612	846,929
<i>Importing Countries:</i>						IMPORTS.					
Germany	24,831	25,320	241,934	224,032	307,398	<i>Importing Countries:</i>					
Austria	884	895	9,376	8,384	11,244	Germany	664	831	7,950	8,001	10,415
Belgium	9,720	9,370	75,636	84,283	109,656	Austria	71	53	675	575	728
Bulgaria	40	146	814	816	1,074	Belgium	55	57	390	410	534
Denmark	5,730	4,903	44,278	44,154	57,814	Denmark	93	88	851	974	1,230
Spain	3,737	6,151	38,954	46,780	67,149	Spain	29	22	203	234	359
Estonia	18	11	123	115	152	Estonia	9	7	57	55	66
Irish Free State	148	126	401	399	545	Irish Free State	1,854	2,072	17,710	19,068	23,464
Finland	3,457	3,369	28,618	28,433	37,038	Finland	24	18	192	194	251
France	32,525	41,423	293,392	318,260	409,056	France	218	608	1,567	3,596	3,968
Gr. Britain and N. Ireland	12,006	16,599	40,629	57,909	77,424	Gr. Britain and N. Ireland	34,051	31,052	425,923	383,017	470,574
Greece . . . . .	...	¹⁾ 8,104	¹⁾ 8,481	12,641	12,641	Greece . . . . .	...	¹⁾ 304	¹⁾ 311	311	390
Hungary	571	373	3,889	3,254	4,314	Hungary	51	22	467	335	381
Italy	7,562	7,383	65,440	65,167	86,889	Italy	55	24	249	201	280
Latvia . . . . .	...	¹⁾ 68	¹⁾ 123	126	278	Latvia . . . . .	...	¹⁾ 55	¹⁾ 37	51	51
Lithuania	31	26	302	269	359	Lithuania	4	2	64	57	84
Norway	3,358	4,852	23,534	27,622	37,366	Norway	33	33	256	289	381
Netherlands	3,977	14,251	45,579	115,404	137,461	Netherlands	2,615	1,138	23,210	20,651	25,942
Poland	2,467	1,673	12,048	13,252	16,852	Poland	500	335	2,840	2,919	3,719
Portugal	1,195	1,237	11,914	10,300	12,035	Portugal	35	29	300	377	478
Sweden	8,166	8,629	70,744	71,002	96,759	Sweden	84	84	686	670	884
Switzerland	2,923	2,876	21,793	24,932	32,058	Switzerland	121	137	1,149	1,206	1,576
Czechoslovakia	2,224	3,474	17,434	18,943	23,177	Czechoslovakia	73	99	877	767	902
Yugoslavia	1,265	860	9,980	10,983	13,823	Yugoslavia	49	40	388	320	388
Canada	3,053	4,085	22,703	25,640	36,110	Canada	2,886	5,717	21,903	32,778	41,249
United States	158,700	172,305	1,152,201	1,265,312	1,598,178	United States	8,402	6,757	66,024	73,390	87,691
Chile	437	692	3,911	3,272	4,394	Chile	459	172	3,311	1,512	2,156
Ceylon	362	306	2,452	2,326	3,150	Syria and Lebanon	29	26	2,264	3,649	3,863
Japan	558	620	5,009	1,652	6,124	Algeria	20	875	...	...	...
Syria and Lebanon	262	265	1,673	1,865	2,368	Egypt . . . . .	...	¹⁾ 11,343	¹⁾ 11,151	15,166	15,166
Algeria	2,321	2,407	22,924	22,353	29,518	Tunisia	324	139	2,533	1,477	1,781
Egypt . . . . .	...	¹⁾ 10,282	¹⁾ 13,801	17,604	29,518	Union of S. Africa . . . . .	...	¹⁾ 8,735	¹⁾ 8,728	11,636	11,636
Tunisia	130	375	2,478	2,734	3,344	Australia	4,012	3,708	35,351	36,782	46,260
Un. of S. Africa . . . . .	...	¹⁾ 16,693	¹⁾ 20,108	29,313	5,057	New Zealand . . . . .	...	¹⁾ 5,240	¹⁾ 7,452	11,407	11,407
Australia	406	302	1,918	3,810	492	<i>Exporting Countries:</i>					
New Zealand . . . . .	...	¹⁾ 176	¹⁾ 287	492	492	China	33	86	503	545	677
<i>Exporting Countries:</i>						India	106	139	2,650	4,045	4,414
India	0	0	0	0	2	Java and Madura . . . . .	...	¹⁾ 1,321	¹⁾ 1,400	2,019	2,019
Totals	293,276	335,092	2,307,404	2,548,557	3,288,216	Totals	56,959	54,370	647,982	627,200	775,632

1) 1) See notes page 394.

STOCKS OF CEREALS

Total stocks of wheat in the United States 1).

LOCATION	First day of month				
	April 1935	January 1935	October 1934	April 1934	April 1933
	1,000 centals				
On farms	56,219	81,626	140,570	69,779	109,911
In interior mills and elevators.	41,352	56,091	53,280	52,376	57,547
Commercial wheat in store	31,129	54,562	72,045	58,279	81,331
In merchant mills and attached elevators 2)	38,866	57,756	69,357	52,163	53,557
In transit to merchant mills and bought to arrive 2)	4,897	7,447	11,232	5,748	6,736
Stored for others by merchant mills 2)	3,965	6,079	6,601	2,869	6,603
<i>Total U. S. wheat as grain . . .</i>	<i>176,428</i>	<i>263,561</i>	<i>353,085</i>	<i>241,214</i>	<i>315,685</i>
Flour (in terms of grain) in merchant mills 2).	10,392	11,684	10,610	12,645	11,251
<i>Total U. S. wheat . . .</i>	<i>186,820</i>	<i>275,245</i>	<i>363,695</i>	<i>253,859</i>	<i>326,936</i>
Canadian wheat in store in bond in the U.S.	9,793	16,538	8,533	3,392	3,595
Wheat of other origin in store in bond in the U. S.	209	17	0	0	0
TOTAL WHEAT IN THE U. S. . . .	196,822	291,800	372,228	257,251	330,531

1) Incomplete data: wheat in transit on rail or water with other destination than to merchant mills and attached elevators and wheat flour in other positions than in these same mills, etc., are not included. -- 2) The figures of the Bureau of Census' partial quarterly census are raised to represent totals. -- 3) Unofficial information.

Wheat and wheat-flour stocks held by commercial mills in the United States 1)

LOCATION	Last day of month				
	March 1935	December 1934	September 1934	March 1934	March 1933
	1,000 centals				
Wheat stocks the property of commercial millers:					
Wheat in transit to merchant mills and bought to arrive	4,760	6,933	10,367	5,329	6,278
Wheat held by mills and mill elevators attached to mills	37,778	53,771	64,017	48,355	49,915
Wheat in other positions 2)	9,850	20,257	22,158	15,464	13,952
<i>Total . . .</i>	<i>52,388</i>	<i>80,961</i>	<i>96,542</i>	<i>69,148</i>	<i>70,145</i>
Wheat-flour in mills and warehouses, and in transit, sold and unsold.	7,021	7,560	6,807	8,148	7,287
Wheat stored for others in mills and mill elevators.	3,854	5,660	6,093	2,660	6,154
GRAND TOTAL 3) . . .	66,344	97,499	112,428	83,530	86,784

1) Partial census, including mills accounting for over 90 % of the total capacity of all commercial mills. -- 2) These stocks are included in the total quantities in country elevators or in the total quantities in public terminal elevators and private terminal elevators not attached to mills. -- 3) Including flour in terms of grain.

Commercial cereals in store in Canada and the United States.

SPECIFICATION	Friday or Saturday nearest 1st of month				
	May 1935	April 1935	March 1935	May 1934	May 1933
	1,000 cents				
WHEAT :					
Canadian in Canada	122,317	129,190	131,532	124,413	131,884
U. S. in Canada	629	629	629	1,337	3,230
U. S. in the United States	23,651	31,129	37,051	53,293	74,637
Canad. in the United States	7,151	9,793	12,891	911	1,498
Of other origin in the United States . .	513	209	10	0	0
Total	154,264	170,950	182,113	179,954	211,249
RYE :					
Canadian in Canada	2,089	2,144	2,174	2,164	2,895
U. S. in Canada	0	0	0	0	55
U. S. in the United States	4,795	5,405	5,953	6,161	4,483
Canad. in the United States	36	0	0	43	304
Of other origin in the United States . .	686	618	498	480	0
Total	7,606	8,167	8,625	8,848	7,737
BARLEY :					
Canadian in Canada	4,059	4,633	4,859	4,757	3,122
U. S. in Canada	0	0	0	0	10
U. S. in the United States	4,398	5,643	6,842	6,245	4,608
Canad. in the United States	90	556	557	0	0
Of other origin in the United States . .	264	135	20	0	0
Total	8,811	10,967	12,278	11,002	7,740
OATS :					
Canadian in Canada	3,215	4,904	5,229	4,425	3,638
U. S. in Canada	5	19	26	16	108
U. S. in the United States	3,740	5,010	6,313	10,564	7,001
Canad. in the United States	42	0	0	0	0
Of other origin in the United States . .	598	678	1,056	0	0
Total	7,600	10,611	12,624	15,005	10,747
MAIZE :					
U. S. in Canada	2,512	2,962	3,062	3,264	777
Of other origin in Canada	1,648	1,379	1,407	582	724
U. S. in the United States	8,298	11,957	15,681	32,112	17,896
Of other origin in the United States . .	389	430	169	0	0
Total	12,847	16,728	20,319	35,958	19,397

Quantities of cereals on Ocean passage with first destination for Europe.

PRODUCTS	Saturday nearest 1st of month				
	May 1935	April 1935	March 1935	May 1934	May 1933
	1,000 cents				
Wheat (and flour in terms of grain)	18,072	17,467	20,232	18,283	24,528
Rye	720	1,334	1,128	533	893
Barley	564	1,980	2,336	2,072	1,948
Oats	570	650	1,939	819	995
Maize	11,731	6,298	9,466	10,536	10,522

AUTHORITY: Broomhall's Corn Trade News.

Stocks belonging to farmers in Germany.

PRODUCTS	% stocks: total production					Stocks in 1,000 centals				
	30 April 1935	31 March 1935	28 Feb. 1935	30 April 1934	30 April 1933 1)	30 April 1935	31 March 1935	28 Feb. 1935	30 April 1934	30 April 1933 1)
Winter wheat . . .	10	14	20	13	17	8,700	12,200	17,400	14,100	16,300
Spring wheat . . .	13	24	38	21	23	1,700	3,100	4,900	3,100	3,300
Winter rye . . .	14	19	26	17	17	23,200	31,500	43,100	32,400	31,000
Winter barley . . .	5	9	12	11	8	800	1,400	1,800	1,700	1,100
Spring barley . . .	12	20	29	14	9	6,600	11,100	16,100	8,500	5,100
Oats . . .	22	34	46	26	28	26,400	40,900	55,300	39,900	41,100
Late potatoes . . .	20	33	40	14	17	184,200	303,900	368,300	126,500	164,300

1) Average between data on 15 April and 15 May.

AUTHORITY: *Marktierichsstelle beim Reichsnährstand* (The absolute figures are calculated by the I. I. A.).

Stocks of cereals in commercial elevators and mills in Germany.

PRODUCTS	Last day of month				
	April 1935	March 1935	February 1935	April 1934	April 1933
	1,000 centals				
WHEAT:					
Grain	36,892	39,251	40,550	29,454	14,339
Flour for bread	3,159	3,536	3,605	2,908	2,743
TOTAL 1)	41,279	44,163	45,557	33,493	18,149
RYE:					
Grain	30,962	32,767	33,206	19,507	13,237
Flour for bread	1,570	2,022	2,112	1,542	1,455
TOTAL 1)	33,270	35,741	36,312	21,923	15,378
BARLEY	2,687	2,467	3,269	2,635	2,033
OATS	2,765	2,542	2,467	1,323	1,898

1) Including flour in terms of grain, on the basis of the coefficient: 1,000 centals of wheat flour = 1,388.89 centals of wheat; 1,000 centals of rye flour = 1,470.59 centals of rye.

Grain and flour stocks at the ports of Great Britain and Ireland 1).

PRODUCTS	First day of month				
	May 1935	April 1935	March 1935	May 1934	May 1933
	1,000 centals				
WHEAT:					
Grain	5,952	6,528	6,720	7,704	6,864
Flour as grain	528	720	768	936	672
TOTAL	6,480	7,248	7,488	8,640	7,536
BARLEY	720	960	900	1,280	880
OATS	336	352	288	624	576
MAIZE	1,728	3,072	4,368	2,520	1,608

1) Imported cereals.

AUTHORITY: *Broomhall's Corn Trade News*.

Stocks of wheat in Italy.

LOCATION	Last day of month				
	February 1935	January 1935	December 1934	November 1934	October 1934
	1,000 centals				
Wheat destined for sale by holding pools ("ammassi collettivi,,):					
in collective granaries	4,229	6,599	7,812	8,011	8,019
in granaries of producers or other persons	827	1,003	1,313	1,334	1,408
Total . . .	5,056	7,602	9,125	9,345	9,427
Wheat in general stores and in free zones 2)	5,292	6,268	7,578	8,031	8,120
Wheat in bond in the chief entrepot centres	888	710	1,110	697	572
Wheat in mills and attached elevators 3) .	7,425	8,900	9,616	11,773	12,580
GRAND TOTAL . . .	18,661	23,480	27,429	29,846	30,699

1) Including a small quantity of wheat belonging to holding pools which is stored in general stores. — 2) Not including quantities belonging to holding pools; see previous note. — 3) Provisional figures referring to mills which have a daily capacity of not less than 40 metric quintals.

Commercial stocks of cereals in Antwerp, Rotterdam and Amsterdam 1).

PRODUCTS AND LOCATION	Saturday nearest 1st of month 2)				
	May 1935	April 1935	March 1935	May 1934	May 1933
	1,000 centals				
WHEAT:					
Antwerp	1,638	1,903	2,050	2,237	1,873
Rotterdam	706	592	915	1,268	718
Amsterdam	12	16	14	44	21
RYE:					
Antwerp	1	105	200	100	36
Rotterdam	220	132	99	176	99
Amsterdam	2	4	5	26	5
BARLEY:					
Antwerp	437	312	196	319	213
Rotterdam	243	276	160	243	11
Amsterdam	1	4	6	57	17
OATS:					
Antwerp	57	66	45	111	66
Rotterdam	18	13	14	183	99
Amsterdam	26	31	36	24	39
MAIZE:					
Antwerp	193	185	260	81	109
Rotterdam	22	132	220	551	220
Amsterdam	10	29	30	15	26

1) Imported cereals. See note on p. 306 of the *Crop Report* of April 1934. — 2) For Antwerp the data refers to the last day of the preceding month, for Amsterdam to the first day of the month indicated.

AUTHORITIES: *Nederlandsche Silo-, Elevator- en Graanhandels Mij.*, Amsterdam, and *Chamber of Commerce and Industry for Rotterdam, Rotterdam*.

STOCKS OF COTTON

Stocks of cotton on hand in the United States.

LOCATION	Last day of month				
	April 1935	March 1935	February 1935	April 1934	April 1933
	1,000 centals				
In consuming establishments	5,226	5,501	5,718	7,808	6,723
In public storage and at compresses	35,508	38,383	41,282	35,014	40,102
TOTAL . . .	40,734	43,884	47,000	42,822	46,825

Stocks of cotton at Bombay and at Alexandria.

PORTS	Thursday nearest 1st of month				
	May 1935	April 1935	March 1935	May 1934	May 1933
	1,000 centals				
Bombay 1)	3,132	3,272	2,876	4,832	3,697
Alexandria 2)	1,832	2,310	2,384	2,620	3,488

1) Stocks held by exporters, dealers and mills. — 2) From February 1934 quantities consumed in Alexandria as well as those returned to the interior of the country are not included; prior to this date quantities returned to the interior are included.

AUTHORITIES: *East Indian Cotton Ass.* and *Commission de la Bourse de Minet-el-Bassal.*

Stocks of cotton in Europe.

LOCATION, DESCRIPTION	Thursday or Friday nearest 1st of month				
	May 1935	April 1935	March 1935	May 1934	May 1933
	1,000 centals				
<i>Great Britain:</i>					
American	1,306	1,418	1,549	2,292	2,230
Argentine, Brazilian, etc.	475	656	763	455	110
Peruvian, etc.	411	468	515	295	215
East Indian, etc.	182	205	122	359	113
Egyptian, Sudanese	1,165	1,173	1,257	1,681	1,016
W. Indian, W. and E. African, Australian	174	170	165	217	313
TOTAL . . .	3,713	4,090	4,371	5,299	3,997
<i>Bremen:</i>					
American	896	990	1,064	2,607	2,526
Other	280	196	187	205	89
TOTAL . . .	1,176	1,186	1,251	2,812	2,615
<i>Le Havre:</i>					
American	532	629	715	1,208	1,138
French colonies	10	15	28	39	7
Other	76	95	98	71	29
TOTAL . . .	618	739	841	1,318	1,174
<i>Total Continent 1):</i>					
American	1,848	1,982	2,171	4,460	4,673
Argentine, Brazilian, etc.	136	134	122	39	25
E Indian, Australian, etc.	196	148	174	265	93
Egyptian	259	262	282	109	117
W. Indian, W. African, E. African, etc. .	121	99	128	181	97
TOTAL . . .	2,560	2,625	2,877	5,054	5,005

1) Includes Bremen, Le Havre, and other Continental ports.

AUTHORITIES: *Liverpool Cotton Ass.* and (for Le Havre) *Bulletin de correspondance de la Bourse du Havre.*

WEEKLY PRICES BY PRODUCTS

(All quotations are, unless otherwise stated, for spots. The monthly averages are based on weekly quotations, the annual averages on the monthly)

DESCRIPTION	17	10	3	26	18	AVERAGE				
	May	May	May	April	April	April	May	May	Commercial	
	1935	1935	1935	1935	1935	1935	1934	1933	1933-34	1932-33
Wheat.										
Budapest: Tiza wheat, 78 kg. p. hl. (pengő p. quintal)	16.67	16.67	16.82	16.90	16.90	16.74	11.20	13.34	9.70	13.73
Braila: Good quality (lei p. quintal)	n. 350	n. 400	n. 400	400	425	412	n. q.	n. q.	* 375	* 535
Winnipeg: No. 1 Manitoba (cents p. 60 lb.)	86 ¹ / ₂	87 ¹ / ₂	87 ¹ / ₂	89 ¹ / ₂	88 ³ / ₄	88 ¹ / ₂	64	67 ¹ / ₂	67 ¹ / ₂	54 ¹ / ₂
Chicago: No. 2 Hard Winter (cents p. 60 lb.)	n. 102 ¹ / ₂	n. 103 ¹ / ₂	n. 104 ¹ / ₂	107 ¹ / ₂	107 ¹ / ₂	106 ¹ / ₂	89 ¹ / ₂	73 ¹ / ₂	89 ¹ / ₂	59 ¹ / ₂
Minneapolis: No. 1 Northern (cents p. 60 lb.)	112 ¹ / ₂	115 ¹ / ₂	116 ¹ / ₂	121 ¹ / ₂	115 ¹ / ₂	115 ¹ / ₂	91 ¹ / ₂	74 ¹ / ₂	89 ¹ / ₂	60 ¹ / ₂
New-York: No. 2 Hard Winter (cents p. 60 lb.)	109	113 ¹ / ₂	116 ¹ / ₂	118 ¹ / ₂	118 ¹ / ₂	117 ¹ / ₂	99 ¹ / ₂	84	98 ¹ / ₂	68 ¹ / ₂
Buenos Aires (a): Barilleta, 80 kg. p. bctol. (paper pesos p. quintal)	7.25	7.30	7.40	7.25	7.40	7.46	5.79	5.89	5.85	6.09
Karachi: Karachi white, 2% barley 1 1/2 % dirt (rupees p. 656 lb.)	23-1-0	22-15-0	22-13-0	22-0-0	22-6-0	* 22-5-9	21-8-6	25-8-6	22-2-4	28-4-2
Berlin: Home grown (free at Brandenburg stations; Rm. p. quintal) 2)	20.80	20.80	20.80	20.70	20.70	20.70	19.30	19.72	18.65	19.60
Hamburg (c. i. f.; Rm. p. quintal):										
No. 2 Manitoba 3)	9.35	9.26	9.44	9.40	n. q.	* 9.41	7.74	9.00	7.94	8.83
Barusso 4)	6.78	6.77	6.83	6.80	n. q.	* 6.89	5.60	7.51	6.22	7.76
Antwerp (francs p. quintal):										
Home-grown	79.00	79.00	80.00	80.00	80.00	80.00	61.75	83.00	63.00	79.70
No. 1 Manitoba (Atlantic) (in bond)	110.00	111.00	113.00	114.00	112.00	110.00	65.25	75.00	67.65	74.35
Barusso (in bond)	79.50	79.50	80.00	82.00	85.00	82.50	47.45	61.62	53.00	66.20
Paris: Home-grown (delivery regional depots; frs. p. quintal) 5):										
76 kg. p. hl. crop of 1934	81.00	81.00	80.00	79.00	78.00	77.25	130.50	97.55	125.65	107.35
London: Home grown (sh. p. 504 lb.) 6)	24/3	24/3	24/3	23/6	22/6	22/3	21/7 ¹ / ₂	25/6	20/10	24/8 ¹ / ₂
Liverpool and London (c. i. f., parcels, shipping current month; sh. p. 480 lb.)										
French (on sample)	n. q.	20/-	19/9	19/9	20/4 ¹ / ₂	20/1 ¹ / ₂	n. q.	n. q.	n. q.	n. q.
No. 1 Northern Manitoba (Atlantic)	n. 32/10 ¹ / ₂	n. 32/10 ¹ / ₂	n. 33/4 ¹ / ₂	n. 33/6	n. 33/9	n. 33/8 ¹ / ₂	26.1	27.5 ¹ / ₂	26/9	26/8 ¹ / ₂
No. 1 Northern Manitoba (Pacific)	32/1 ¹ / ₂	32/3 ¹ / ₂	32/9 ¹ / ₂	33/-	33/6	33/3	25/11 ¹ / ₂	27/2	26/7	26/4
No. 3 Northern Manitoba (Pacific)	29/7 ¹ / ₂	29/11 ¹ / ₂	30/3	30/5 ¹ / ₂	30/10 ¹ / ₂	30/7 ¹ / ₂	23/11 ¹ / ₂	25/11 ¹ / ₂	24/5 ¹ / ₂	25/2 ¹ / ₂
White Pacific	n. q.	n. q.	n. q.	n. q.	n. q.	19/11	n. q.	n. q.	* 20/5	n. q.
Rosafé (afloat) 7)	n. 24/-	n. 23/3	23/7 ¹ / ₂	24/1 ¹ / ₂	24/6	24/1	18/10 ¹ / ₂	22/0 ¹ / ₂	19/5 ¹ / ₂	23/2
Australian	27/6	27/4 ¹ / ₂	27/9	28/-	28/1 ¹ / ₂	28/1	23/1 ¹ / ₂	25/2 ¹ / ₂	23/4	25/7
Milan (b): Home-grown, soft, e Buono mercantile e 76-78 kg. p. hl. (lire p. quint.)	113.00	110.50	109.50	109.00	109.00	107.75	85.00	94.75	84.10	101.80
Genoa: Sicilian Durum (c. i. f.; lire p. quint.)	122.50	122.50	123.75	124.00	125.00	123.80	108.45	115.25	107.85	* 119.75
Genoa (c. i. f.; U. S. \$ p. quintal):										
No. 2 Manitoba (Pacific)	¹¹⁾ 3.72	¹¹⁾ 3.72	¹¹⁾ 3.75	3.84	n. q.	n. q.	2.81	2.52	2.93	2.23
No. 2 Canadian Durum 8)	4.27	4.27	4.30	4.31	4.43	4.35	3.18	2.59	3.11	2.59
Plate, 80 kg. p. hl. 9)	116/9	116/9	116/9	116/-	115/-	115/7	90/1	* 1.91	* 92/10	* 1.83
Rye.										
Berlin: Home-grown (free at Brandenburg stations; Rm. p. quintal) 2)	16.80	16.80	16.80	16.70	16.70	16.70	16.20	15.47	15.34	15.52
Hamburg (c. i. f.; Rm. p. quintal): Plate, 72-73 kg. p. hl.	5.05	5.09	5.11	5.12	n. q.	* 5.34	4.33	5.95	4.76	* 5.98
Budapest: Pest rye (pengő p. quintal)	11.95	11.47	11.12	11.05	11.45	11.39	6.09	6.22	5.24	6.77
Warsaw: Good quality (zloty p. quint.)	14.87	14.37	14.37	14.37	14.37	13.99	12.56	19.12	14.32	18.06
Winnipeg: No. 2 (cents p. 56 lb.)	46	48 ¹ / ₂	50 ¹ / ₂	52 ¹ / ₂	53 ¹ / ₂	52	45 ¹ / ₂	45 ¹ / ₂	47 ¹ / ₂	37 ¹ / ₂
Minneapolis: No. 2 (cents p. 56 lb.)	54 ¹ / ₂	58 ¹ / ₂	61 ¹ / ₂	62	63 ¹ / ₂	62	59 ¹ / ₂	52 ¹ / ₂	63	41 ¹ / ₂
Groningen (c): Home-grown (fl. p. quint.)	7.25	7.25	7.25	7.25	7.25	7.26	* 7.33	3.73	6.65	3.92

* Indicates that the product, during part of the period under review, was not quoted. — n. q. = not quoted. — n. = nominal. — a) Thursday prices. — b) Saturday prices. — c) Prices of preceding Tuesday.

1) August-July. — 2) 1 Oct. 1933-15 Aug. 1934 for wheat and 1 Oct. 1933-15 July 1934 for rye: minimum prices; subsequently, fixed producers prices for the price region of Berlin city. See also *Bull. of Agric. Economics and Sociology*, Aug. 1934, p. 342. — 3) From Nov. 1934, No. 1 Manitoba. — 4) Aug.-Dec. 1932: 80 kg. p. hl.; year 1933: 79 kg.; subsequently: 80 kg. — 5) 16 July 1933-25 December 1934: minimum prices on the farm increased by transport costs from farm to Paris stations. From 1 August 1934 a considerable percentage of old crop wheat has to be used in the flour for breadmaking. — 6) From Aug. 1933: prices on the farm. — 7) August-Dec. 1932: 64 lb. p. bushel; Jan.-Oct. 1933: 63 1/2 lb.; Nov.-Dec. 1933: 63 lb.; year 1934: 64 lb.; subsequently: 63 1/2 lb. — 8) From Dec. 1934: No. 1. Can. Dur. — 9) From Feb. 1934: prices in sh. p. 1000 kg. — 10) 11 April: 22-6-0. — 11) Atlantic.

DESCRIPTION	17	10	3	26	18	AVERAGE					Commercial	
	May	May	May	April	April	April	May	May			Season 1)	
	1935	1935	1935	1935	1935	1935	1934	1933			1933-34	1932-33
Barley.												
Warsaw: Malting, good quality (zloty p. quintal)	17.25	17.75	17.75	17.75	17.75	17.87	n. q.	* 16.00			* 15.87	* 17.11
Braila: Average quality (lei p. quintal)	200	230	230	240	240	239	171	164			* 154	* 186
Prague: Malting, av. qual. (crs. p. quintal) 2)	135.50	135.50	135.50	135.50	135.50	135.50	87.50	93.75			* 94.20	* 83.30
Winnipeg: No. 4 Western (cents p. 48 lb.)	38 3/8	37 3/8	39 1/2	40 1/8	41 7/8	41 1/2	35 3/4	33 3/8			36 7/8	29 3/4
Chicago: Feeding (on sample; cents p. 48 lb.)	n. 60	n. 70	n. 75	n. 78	n. 80	76 3/8	61	46 1/4			54	33 3/4
Minneapolis: No. 2 Feeding (c. p. 48 lb.)	52	56	61	65	67	66 3/4	41 1/2	31 3/4			45 3/4	27 3/4
Berlin: Home-grown fodder (free at Brandenburg stations; Rm. p. quint.) 3) 4)	16.70	16.70	16.70	16.60	16.60	16.60	15.85	17.09			* 16.17	* 16.58
Antwerp: Danubian (in bond; francs p. q.)	74.00	74.00	75.00	75.50	75.00	74.85	52.85	52.60			49.35	55.50
London: English malting, best quality (sh. p. 448 lb.) 5)	n. 32/6	n. 33/6	n. 32/6	n. 32/6	37/6	36/3	* 32/6	30/-			* 39 5/16	* 35/-
Liverpool and London (c.i.f., parcels; shipping current month; sh. p. 400 lb.)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	15/3			* 13/9 1/2	* 16/7
Danubian, 3 % dirt	19/3	19/6	20/-	20 4 1/2	21 4 1/2	21/1	16 11 1/2	17 5 1/2			17 9 1/2	18 1 1/2
No. 3 Canadian Western	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	18/1	* 24/2			22 7/8	22 8
Californian malting (sh. p. 448 lb.)	16 4 1/2	16/3	16 4 1/2	17/-	17/3	17 0 1/4	14/4	15/6			14 2 1/2	* 15 9 1/2
Plate (64-65 kg. p. hl)	15/9	16 0 3/4	16/-	16/6	16 7 1/2	16 4 3/4	13/6 3/4	15 3 1/2			* 14 0 1/4	* 16/4
Persian	5.02	5.05	5.15	5.17	5.17	5.17	4.32	3.76			4.44	4.40
Groningen a): Home grown, winter (fl. p. q.)												
Oats.												
Braila: Good quality (lei p. quintal)	n. q.	310	n. q.	n. q.	280	n. q.	* 210	n. q.			* 148	* 195
Winnipeg: No. 2 White (cents per 34 lb.)	40 3/8	39 7/8	39 3/4	42 3/8	42 7/8	42 3/8	34 3/8	28 3/8			33 3/4	26 1/2
Chicago: No. 2 White (cents per 32 lb.)	46	48 1/2	48 3/4	52	51 1/2	51 3/4	36	26 3/8			37 3/4	21 3/4
Buenos Aires b): Current quality (paper pesos p. quintal)	5.65	5.45	5.40	5.45	5.55	5.55	3.26	4.08			3.65	4.43
Berlin: Home grown (free at Brandenburg stations; Rm. p. quint.) 3)	16.90	16.90	16.90	16.80	16.80	16.80	16.00	13.45			14.92	13.05
Paris: Home grown, black and other (delivered regional depots; frs. p. quintal)	50.50	45.60	44.00	43.60	45.50	44.30	41.15	66.10			48.00	76.30
London: Home grown white (sh. p. 336 lb.) 5)	22/-	22/-	22/-	22/-	22/-	21/6	19/-	18/-			18 1 1/2	18/6
Liverpool and London (c.i.f., parcels; shipping current month; sh. p. 320 lb.)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.			n. q.	n. q.
Canadian, No. 2 Western (Pacific) 6)	20 4 1/2	20 4 1/2	20 9	20 4 1/2	21/-	20/7	16/10	15 5 1/2			* 17/4	* 16/9
Plate (f. a. q.)	13/9	13/3	13/3	13/3	13/3	13/3	8/4	11/11			10/2	12/9
Milan (c) (lire p. quintal):	n. 67.50	67.50	67.50	67.50	67.50	67.50	51.50	55.10			50.70	62.80
Home grown	64.00	64.00	64.00	64.00	64.00	64.00	50.25	49.75			50.05	57.10
Foreign												
Maize.												
Braila: Average quality (lei p. quintal)	215	220	220	220	220	215	151	200			* 223	* 173
Chicago: No. 3 Yellow (cents p. 56 lb.)	87 1/2	89	89 3/4	89 3/4	91 1/2	89 1/2	42 7/8	31 7/8			78 3/4	46 7/8
Buenos Aires (b): Yellow Plata (paper pesos p. quintal)	4.62	4.52	4.52	4.52	4.75	4.81	4.61	3.94			5.72	4.26
Antwerp (in bond; francs p. quintal):												
Yellow Plata	57.00	59.50	65.00	69.00	71.00	69.35	49.25	53.35			53.70	48.35
Cinquantino (Argentine "Cuarentino")	69.00	69.50	71.00	69.50	70.50	70.10	56.00	72.85			58.25	58.00
Liverpool and London (c.i.f., parcels; shipping current month; sh. p. 480 lb.):	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.			n. q.	n. q.
Danubian	16/6	16 4 1/2	16 4 1/2	16 9	17/6	17/1	16 3 3/4	16 8 3/4			20/-	16 9 1/4
Yellow Plata	18 3	18 3	18 3	18 6	18/-	18 2	n. q.	17/3			19 8 3/4	16/7
No. 2 White flat African	74.00	71.50	70.50	70.00	70.00	69.50	57.00	51.00			21 4 1/2	n. q.
Milan (c): "Alto Milanese" (lire p. quint.)											58.50	50.80

* Indicates that the product, during part of the period under review, was not quoted. — n. q. = not quoted. — n. = nominal. — a) Prices of preceding Tuesday. — b) Thursday prices. — c) Saturday prices.

1) Barley and oats: August-July; maize: May-April. — 2) From August 1934: monopoly price, paid to producers, for delivery Prague. See also *Bull. of Agric. Econ. and Soc.*, Nov. 1934, p. 512 — 3) From 16 July 1934 for fodder barley and from 1 August 1934 for oats: fixed producers' prices for the price region of Berlin city. See also *Bull. of Agric. Econ. and Soc.*, Aug. 1934, p. 342. — 4) July-August 1933: two rowed winter barley; Sept. 1933-June 1934: spring barley, average quality. — 5) From Aug. 1933: prices on the farm. — 6) June-Dec. 1934: Atlantic. — 7) Shipping May-June. — 8) Atlantic. — 9) New crop. — 10) Shipping June - July.

DESCRIPTION						AVERAGE					
	17	10	3	26	15	April	May	May	Commercial		
	May	May	May	April	April					Season 1)	
	1935	1935	1935	1935	1935	1935	1934	1933		1934	1933
Rice (milled).											
Valencia (a): No. 3 Belloch (pesetas p. quintal)	57.00	57.00	57.50	57.50	57.50	57.50 *	45.35	40.75	46.95	43.10	
Milan (b) (lire p. quintal):											
Vialone, oiled	155.00	155.00	155.00	160.00	162.50	160.75	193.85	200.75	177.10	198.20	
Maratelli, oiled	131.00	131.00	131.00	132.00	134.00	132.25	146.75	140.60	138.05	139.90	
Originario, white	121.50	121.50	118.00	118.50	119.50	118.87	101.50	94.35	102.80	95.50	
Rangoon: No. 2 Burma (rupees p. 7500 lb.)	272 1/2	272 1/2	262 1/2	262 1/2	262 1/2	255	171 1/4	197 1/2	201 1/8	194 1/4	
Saigon (Indo-chinese piastres p. quintal):											
No. 1 Round white, 25 % broken	...	...	...	4.98	4.56	4.46	2.90	4.07	3.25	4.08	
No. 2 Japan, 40 % broken	...	...	...	4.73	4.32	4.26	2.76	3.91	3.09	3.90	
Marseilles (a): No. 1 Saigon (c. i. f.; frs. p. quintal)	55.00	52.00	55.00	52.00	50.00	49.50	40.50	50.75	45.95	53.10	
London (a) (c. i. f.; shillings p. cwt.):											
No. 3 Spanish Belloch, oiled	n. q.	n. q.	n. q.	n. c.	n. q.	* 13/6	10/4	* 12/1	* 10/9	12/5 1/4	
No. 6 Italian good, oiled	n. q.	n. q.	n. q.	15/-	n. q.	* 15/-	10/8 1/2	8/10 1/2	11/10 1/4	11/2 1/4	
American Blue Rose, extra fancy	15/-	15/-	14/9	14/3	n. q.	* 14/3	17/11 1/4	17/4 1/2	17/3 1/2	16/9 1/4	
No. 2 Rangoon or Bassin (Burma)	8/3	8/3	8/1 1/2	8/1 1/2	n. q.	* 7/8 1/2	5/10 1/4	6/5	6/7 1/4	6/6 1/4	
No. 1 Saigon	8 1/2	8 1/2	8/4 1/2	8/4 1/2	n. q.	* 7/10	5/7 1/4	6/7	6/3 1/4	6/9 1/4	
Siam Super, white	10/7 1/2	10/7 1/2	10/7 1/2	10/4 1/2	n. q.	* 9/10 1/2	6/10	8/4 1/4	7/5	8/1 1/2	
Tokyo: Chumai (brown Japanese, average quality, yen p. koku)	29.10	29.40	29.50	29.10	29.10	29.25	24.57	21.62	26.09	21.62	
Linseed.											
Buenos Aires (a): Current quality (paper pesos p. quintal)	11.90	11.85	11.90	11.80	11.85	11.92	13.90	10.20	12.74	10.56	
Antwerp: Plate (in bond; frs. p. quint.)	128.50	130.00	131.00	130.00	130.50	130.60	113.35	107.10	107.60	111.70	
London (c. i. f.; £ p. long ton):											
Plate (delivery Hull)	9-10-0	9-8-9	9-8-9	9-10-0	9-8-9	9-9-4	10-17-2	9-5-11	10- 0-8	9-11-11	
Bombay bold	12-7-6	12-5-0	12-3-9	12-2-6	12-3-9	12-3-5	12-15-0	11-2-2	11-17-0	11- 5- 4	
Duluth: No. 1 Northern (quotations of terminal market; cents p. 56 lb.)	172 1/2	175	178	178 1/2	176	177 1/8	187 1/2	144 1/4	186 1/8	156 1/4	
Cottonseed.											
Alexandria (piastres p. ardeb):											
Upper Egypt	67.7	69.9	64.4	59.3	64.8	62.2	40.0	65.8	41.8	67.3	
Sakellaris	59.7	62.4	57.4	52.8	58.2	56.2	36.9	61.9	* 37.5	63.6	
London: Sakellaris (c. i. f., delivery Hull; £ p. long ton)	n. 6-2-6	n. 6-10-0	n. 6-1-3	n. 5-16-3	n. 5-18-9	n. 5-17-6	4-2-2	6-9-8	4-5-11	6-11-4	
Cotton.											
New Orleans: Middling (cents p. lb.)	12.57	12.40	12.30	12.30	11.98	11.90	11.39	8.64	10.90	7.27	
New York: Middling (cents p. lb.)	12.50	12.40	12.25	12.25	11.90	11.79	11.46	8.75	11.07	7.38	
Bombay: M. g. Broach f. g. (terminal market quotations; rup. p. 784 lb.)	249	249	248	240	233	232 1/2	193 1/4	199 1/4	197	201 1/4	
Alexandria (talars p. kantar):											
Sakellaris, f. g. f.	15.10	14.90	14.80	14.70	14.75	14.81	15.25	14.55	14.44	14.15	
Ashmuni-Zagora, f. g. f.	13.67	13.52	13.35	13.30	13.35	13.26	11.69	12.86	11.63	12.46	
Bremen: Middling (U. S. cents p. lb.)	14.22	14.25	14.04	13.89	13.69	13.58	13.14	9.88	12.56	8.54	
M. g. Broach, f. g. (pence p. lb.)	n. 6.60	n. 6.60	n. 6.40	n. 6.40	n. 6.40	n. 6.36	n. 4.84	n. 4.74	n. 4.81	n. 4.81	
Le Havre: Middling (Gulf; frs p. 50 kg.)	250.00	246.50	244.00	243.00	n. q.	* 236.65	230.25	254.00	229.85	237.75	
Liverpool (pence per lb.):											
Middling, fair	n. 7.90	n. 7.88	n. 7.81	n. 7.78	n. 7.63	n. 7.60	n. 7.18	n. 7.23	n. 7.11	n. 6.76	
Middling	6.90	6.88	6.81	6.78	6.63	6.60	6.13	6.03	6.02	5.61	
São Paulo, g. f.	6.97	6.98	6.91	6.93	6.78	6.75	6.03	6.29	6.13	5.87	
C. p. Oomra, superfine	6.17	6.16	6.04	6.03	5.89	5.88	4.86	5.20	4.92	5.22	
M. g. Broach, f. g.	5.95	5.95	5.86	5.88	5.74	5.71	4.71	n. 5.16	n. 4.62	n. 5.01	
Egyptian Sakellaris, f. g. f.	8.43	8.42	8.38	8.45	8.29	8.35	8.39	8.07	8.07	7.77	
Upper Egyptian, f. g. f.	7.93	7.88	7.87	7.94	7.78	7.76	6.62	7.29	6.64	7.01	

* Indicates that the product, during part of the period under review, was not quoted. — n. q. = not quoted. — n. = nominal. — a) Thursday prices. — b) Saturday prices.

1) Cottonseed: Sept.-Aug.; cotton: Aug.-July. — 2) 12 April: 4.37; 5 April: 3.95. — 3) 12 April: 4.20; 5 April: 3.79. — 4) May futures. — 5) July futures. — 6) Price 25 April. — 7) Price 17 April.

DESCRIPTION	17	10	3	26	18	AVERAGE					Commercial Season	
	May	May	May	April	April	April	May	May				
	1935	1935	1935	1935	1935	1935	1934	1933	1934	1933	1934	1933
Bacon.												
London, Provision Exchange (a) (shill. p. cwt.):												
English, N ^o 1, lean sizable	92/-	92/-	91/6	89/6	88/-	88/7	89/4	...	91/2	...		
Danish, N ^o 1, sizable	91/-	91/-	91/-	88/-	86/-	86/6	82/-	81/7	87/11	74/5		
Irish, N ^o 1, sizable	92/-	92/-	92/-	91/-	85/6	86/9	87/10	90/3	90/5	83/4		
Lithuanian, N ^o 1, sizable	86/-	86/-	86/-	84/-	80/-	81/-	74/6	73/-	82/-	65/5		
Dutch, N ^o 1, sizable	88/-	88/-	88/-	85/-	83/-	83/6	78/6	76/-	84/-	67/6		
Polish, N ^o 1, sizable	84/-	84/-	84/-	82/-	78/-	79/-	74/3	71/3	80/11	63/10		
Swedish, N ^o 1, sizable	88/-	88/-	88/-	85/-	83/-	83/6	78/-	76/6	84/4	70/-		
Canadian, N ^o 1, sizable	84/-	84/-	84/-	82/-	78/-	79/-	72/10	73/-	80/3	64/6		
Butter.												
Copenhagen (b): Danish (crs. p. quint.) . .	140.00	140.00	146.00	152.00	160.00	161.00	131.80	149.50	160.75	171.00		
Leeuwarden, Commission for butter quotations (b): Dutch (cents p.kg.) . . .	32	32	34	34	36	36 1/2	41	52	44 3/4	60		
Zutphen, auction: Dutch (price for home consumption; cents p. kg.)	145	145	147	147	139	147	144	154 1/2	147 1/4	159 1/4		
Germany (c) (fixed prices; Rm. p. 50 Kg.) 1):												
Butter with quality mark	130.00	130.00	130.00	130.00	130.00	130.00	126.00	109.61	129.04	112.72		
Creamery butter	123.00	123.00	123.00	123.00	123.00	123.00	117.00	109.75	120.87	106.25		
London (d): English creamery, finest quality (shillings p. cwt.)	107/4	107/4	107/4	107/4	107/4	107/4	109/8	140/-	109/6	140/10		
London, Provision Exchange (a) (shill. p. cwt.):												
Danish creamery, unsalted	89/-	89/-	91/-	95/-	98/-	97/10	85/1	92/9	98/8	103/9		
Estonian, unsalted	71/6	n. q.	n. q.	n. q.	n. q.	n. q.	72/-	n. q.	* 67/11	* 84/4		
Latvian, unsalted	n. q.	n. q.	n. q.	n. q.	n. q.	* 77/10	72/3	76/-	* 69/3	* 82/9		
Dutch creamery, unsalted	71/-	73/-	73/6	71/-	81/-	75/7	73/9	93/3	80/4	103/4		
Argentine, finest, unsalted	71/6	73/-	73/-	73/-	n. q.	* 73/4	* 71/-	71/6	* 68/3	* 77/10		
Siberian, salted	69/-	70/-	71/-	70/-	n. q.	n. q.	* 70/8	n. q.	* 66/-	* 73/5		
Australian, finest, salted	75/6	75/6	75/6	72/6	71/6	73/1	73/9	75/9	70/2	80/-		
New Zealand, finest, salted	77/6	77/6	78/-	76/6	76/6	77/1	75/11	77/3	72/7	81/1		
Cheese.												
Milan (lire p. quintal):												
Farmigiano-Reggiano, 1st quality, production 1932 2)	720.00	720.00	720.00	720.00	700.00	712.50	870	1,262.00	989.00	1,234.00		
Farmigiano - Reggiano, 1st quality, production 1933 2)	625.00	625.00	625.00	625.00	620.00	621.25	745.00	1,050.00	806.00	1,015.00		
Green Gorgonzola, mature, choice . . .	515.00	505.00	505.00	510.00	505.00	506.25	425.00	476.25	412.60	473.70		
Rome: Roman Pecorino, choice (lire p. q)	787.00	787.00	787.00	787.00	787.00	774.50	665.60	1,094.00	658.65	1,029.00		
Alkmaar: Edam 40 + (40 % butterfat, with the country's cheese-mark) factory cheese, small (florins p. 50 kg.) . . .	13.00	11.50	12.50	12.50	13.00	13.25	19.00	24.12	20.98	22.40		
Gouda: Gouda 45 + (whole milk cheese, with the country's cheese-mark) home made (florins p. 50 kg.)	14.00	14.00	14.00	14.50	n. q.	* 14.50	19.50	26.87	22.52	26.59		
Kempten (c) (Rpf. p. 1/2 kg.):												
Soft cheese, green, 20 % butterfat . .	26	26	26	26	26	26	19	18	23 1/4	20 1/4		
Emmenthal from the Allgäu, whole milk cheese, 1st quality	75	75	75	75	75	75	71	73	71 1/4	72 1/4		
London, Provision Exchange (a) (shill. p. cwt.):												
English Cheddar, finest farmers	86/-	86/-	86/-	86/-	86/-	86/-	n. q.	91/9	* 83/5	86/3		
English Cheshire, officially graded 3) .	88/8	88/8	88/8	88/8	88/8	90/5	* 56/-	79/11	83/4	94/4		
Italian Gorgonzola (d)	109/8	110/10	110/10	113/2	114/4	112/3	86/7	81/9	82/9	85/3		
Dutch Edam, 40 + (d)	31/9	32/6	34/6	35/-	35/-	35/4	46/11	55/11	54/5	59/8		
Canadian, finest white	62/6	61/6	61/-	61/-	61/-	61/1	53/9	67/3	54/-	59/8		
New Zealand, finest white	43/9	43/9	43/6	44/6	44/3	44/8	44/7	46/2	46/5	46/10		

* Indicates that the product, during part of the period under review, was not quoted. — n. q. = not quoted. — n. = nominal — a) Average prices of Thursday and Friday morning. — b) Thursday prices. — c) Wednesday prices. — d) Average prices for the week.

1) See note on page 306 of the *Crop Report* of April 1934. — 2) Prices of cheese made in 1932 are compared for the preceding years, with those of cheese made in 1931 and in 1930 respectively; prices of 1933 cheese with those of cheese made in 1932 and 1931. The yearly averages refer to periods from Sept. to August. — 3) From May 1934 onwards: National Mark, selected. — 4) New make: 53/8. — 5) New make.

DESCRIPTION	17	10	3	25	18	AVERAGE					
	May	May	May	April	April	April	May	May	Commercial Season		
	1935	1935	1935	1935	1935				1934	1933	1934	1933
Eggs (fresh).											
Antwerp, auction: Belgian, average qual. (frs. p. 100)											
Denmark (a): Danish for export (crs. per quintal)	29.00	30.00	31.00	31.00	29.00	30.80	27.75	29.35	42.80	48.40	
Roermond, auction: Dutch, 57/58 gr. each, white (fl. p. 100) 1): Fixed price for export into Germany. Price for other destinations	...	60.00	60.00	60.00	64.00	62.40	57.50	73.00	103.60	105.85	
Warsaw (b): Polish, average weight 50 gr. each, different colours (zloty p. 1440, including box)	...	...	...	...	...	...	3.06	2.12	3.96	3.48	
Berlin (c): German, big, new laid (Rm. p. 100): marked "GIS", 65 gr. each. marked "GIB", 55/60 gr. each.	...	...	...	75.00	72.50	...	75.60	85.75	106.50	123.60	
London, Egg Exchange (d) (sh. p. great hundred):	9.00	9.00	9.00	9.00	9.00	9.00	9.25	8.81	10.37	10.41	
English, National mark, specials	8.00	8.00	8.00	8.00	8.00	8.00	8.00	7.82	9.03	9.05	
Belgian, 15 1/2 lb. p. 120	10/-	10/3	10/3	9/9	9/9	9/10	9/11 1/4	10/4 1/4	15/5	13/10 1/4	
Danish, 18 lb. p. 120	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	* 11/0 1/4	* 11/1	
North Irish, 18 lb. p. 120	8/4 1/2	8/5 1/4	8/9	9/9	9/1 1/2	9/1 1/2	9/1 1/2	8/9 1/2	12/5 1/4	12/9 1/4	
Dutch, all brown, 18 lb. p. 120	9/6	9/7 1/2	9/9	9/4 1/2	9/4 1/2	9/5 1/2	9/4	9/10 1/2	* 12/9 1/4	15/1	
Polish, 55/54 grams each 2)	9/1 1/2	9/3	9/4 1/2	8/11 1/2	9/1 1/2	9/2 1/4	* 10/3 1/4	* 10/5 1/4	13/5	* 14/0 1/4	
Chinese, violet	5/7 1/2	5/8 1/4	5/7 1/2	5/3 1/4	5/2 1/2	5/5	5/1 1/4	6/5 1/4	* 6/10 1/4	* 7/4 1/4	
Australian, 16 lb. p. 120	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	* 8/3 1/4	* 9/10	
	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	* 11/5 1/4	* 12/4 1/4	
Maritime freights 3).											
Shipments of Wheat and Maize.											
Danube to Antwerp/Hamburg. (shill. per long ton)	n. 14/6	n. 14/6	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	13/7 1/2	* 14/1	* 13/9
Black Sea to Antwerp/Hamb. (shill. per long ton)	n. 11/-	n. 11/-	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	* 9/6	10/3	10/-
St. John to Liverpool 4)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	* 1/11	* 1/7	
Port Churchill to United Kingdom	n. q.	n. q.	n. q.	n. q.	1/6	* 1/6	n. q.	n. q.	n. q.	* 1/11	* 1/7
Montreal to United Kingdom (shill. per 450 lb.)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	* 2/9	* 3/-
Gulf to United Kingdom 4)	1/7 1/2	1/7 1/2	1/7 1/2	1/7 1/2	n. q.	n. q.	n. q.	1/4 1/2	* 1/4 1/4	* 1/8 1/4	
New York to Liverpool 4)	2/6	2/6	2/6	2/6	2/6	2/6	n. q.	2/-	2/6 1/4	2/-	
Northern Range to U.K./Cont.	1/6	1/6	1/6	1/6	1/6	1/6	n. q.	1/6	1/6	1/6	
North Pacific to United Kingdom (sh. per long ton)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	* 1/9	* 1/9	0.06
Vancouver to Yokohama 4) (U.S.A. \$ p. short ton) 5)	17/-	17/-	17/-	17/-	17/-	17/-	19/-	18/6	20/1	20/10	
La Plata Down River 6) /Bahia Blanca to U.K./Continent	...	...	...	...	...	...	2.25	1.85	2.41	1.96	
La Plata Up River 7) /Necochea to U.K./Continent	10/15/9	10/15/9	10/15/9	10/15/3	10/15/3	10/14/10 1/2	13/4 1/2	14/3 1/2	14/1	14/-	
Western Australia to U.K./Continent	10/17/-	10/17/-	10/17/-	10/16/6	10/16/6	10/16/1 1/2	15/2 1/4	16/1 1/4	15/9	15/10	
	10/23/6	10/23/6	10/23/6	10/23/6	10/23/6	10/23/-	23/6 1/4	21/6	23/10 1/4	24/6 1/4	
Shipments of Rice.											
Saigon to Europe (shill. per long ton)	20/-	20/-	20/-	n. q.	n. q.	n. q.	22/3	* 21/6	24/2 1/4	23/5 1/4	
Burma to U.K./Continent (shill. per long ton)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	* 21/-	* 21/8	* 23/3	* 23/1 1/4	
* Indicates that the average is for the year ending 1934.											

* Indicates that the product or the maritime freight, during part of the period under review, was not quoted. — n. q. = not quoted. — n. = nominal. — a) Average prices for weeks beginning on Mondays indicated. — b) Average prices for weeks beginning on preceding Mondays. — c) Thursday prices. — d) Prices of preceding Monday.

1) See note on p. 307 of the *Crop Report* of April 1934. — 2) From Nov. 1933, 57/52 grams each. — 3) Rates for entire car goes; see note on p. 307 of the *Crop Report* of April 1934. — 4) Rates for parcels by liners. — 5) May-Oct. 1934 and from includes the ports on the Paraná River as far as San Lorenzo. Cargoes from ports beyond San Lorenzo (Colastine, Santa Fé and Paraná) are subject to an extra rate of freight. — 6) "Down River" includes the ports of Buenos Aires, La Plata and Montevideo. — 7) "Up River" notes on p. 247 and 321. — 8) August-July. — 9) Freight in U. S. A. \$ per 100 lb. — 10) Minimum rates, see

EXCHANGE RATES

RELATION OF VARIOUS CURRENCIES TO THEIR PARITY WITH THE SWISS FRANC (1)

NATIONAL CURRENCIES	Exchange rates					Percentage bonus (+) or loss (—)				
	17 May 1935	10 May 1935	3 May 1935	26 April 1935	18 April 1935	17 May 1935	10 May 1935	3 May 1935	26 April 1935	18 April 1935
Germany: free reichsmark.	124.375	124.350	124.350	124.350	124.375	+ 0.7	+ 0.7	+ 0.7	+ 0.7	+ 0.7
Argentina: paper peso †)	95.031	93.844	93.469	93.062	93.781	— 56.8	— 57.3	— 57.5	— 57.7	— 57.4
Belgium: belga.	52.300	52.300	52.300	52.325	52.375	+ 0.8	+ 0.8	+ 0.8	+ 0.8	+ 0.9
Canada: dollar	3.092	3.090	3.070	3.075	3.080	— 40.3	— 40.4	— 40.8	— 40.7	— 40.6
Denmark: crown	67.750	67.000	66.750	66.375	67.000	— 51.2	— 51.8	— 51.9	— 52.2	— 51.8
Spain: peseta	42.250	42.250	42.250	42.225	42.250	— 57.8	— 57.8	— 57.8	— 57.8	— 57.8
Egypt: pound 2)	15.205	15.015	14.955	14.890	15.005	— 39.7	— 40.5	— 40.7	— 41.0	— 40.5
United Kingdom: pound sterling	3.093	3.092	3.089	3.086	3.091	+ 1.0	+ 1.0	+ 0.9	+ 0.8	+ 1.0
France: franc	20.382	20.382	20.376	20.367	20.380	+ 0.4	+ 0.4	+ 0.3	+ 0.3	+ 0.4
Indo-China: piastre 3)	54.500	55.250	56.250	56.250	55.750	— 39.9	— 39.0	— 37.9	— 37.9	— 38.5
Hungary: pengő 4)	114.798	113.363	112.910	112.419	113.288	— 39.3	— 40.1	— 40.3	— 40.6	— 40.1
India: rupee †)	25.525	25.475	25.500	25.475	25.650	— 6.4	— 6.6	— 6.5	— 6.6	— 6.0
Italy: lira	89.709	88.588	88.234	87.851	88.529	— 65.3	— 65.7	— 65.8	— 66.0	— 65.7
Japan: yen †)	209.650	209.050	208.750	208.500	208.500	+ 0.6	+ 0.4	+ 0.2	+ 0.1	+ 0.1
Netherlands: florin	58.300	58.300	58.300	58.300	58.300	+ 0.3	+ 0.3	+ 0.3	+ 0.3	+ 0.3
Poland: zloty	3.100	3.100	3.100	3.100	3.100	0.0	0.0	0.0	0.0	0.0
Rumania: leu	78.250	77.250	77.000	76.750	77.250	— 43.7	— 44.4	— 44.6	— 44.7	— 44.4
Sweden: crown	12.895	12.895	12.900	12.900	12.915	+ 0.8	+ 0.8	+ 0.8	+ 0.8	+ 0.9
Czechoslovakia: crown										

1) The exchange rate represents the value of 100 units of the national currency (for the dollar and the pound sterling 1 unit) expressed in Swiss francs, as far as possible on the Zurich Exchange. With regard to the currencies marked thus (†) a conversion has been made; the original exchange rates on London being converted into Swiss francs by means of the rate of the 2 in Zurich. — 2) As the relation between the Egyptian pound and the pound sterling remains unchanged, the exchange rate of the latter only is given. — 3) As the relation between the Indo-Chinese piastre and the French franc changes only slightly, the exchange rate of the latter only is given. — 4) Bank notes.

VARIATIONS IN THE INDEX-NUMBERS OF PRICES

On the following pages the index-numbers of prices of agricultural products and other price-indices of interest to the farmer are given as published in the different countries.

Owing to the substantial divergence, which often exists in the value and significance of the data available, it has been considered opportune to reproduce all the data in their original form, without attempting formally to unite them.

In addition to the original data summary tables are given below.

Percentage variations in the index-numbers for April 1935

COUNTRIES	Comparison with March 1935		Comparison with April 1934	
	Index-numbers of prices of agricultural products	Index-numbers of wholesale prices in general	Index-numbers of prices of agricultural products	Index-numbers of wholesale prices in general
Germany	— 32.2	+ 0.1	— 25.6	+ 5.2
England and Wales	+ 5.9	+ 1.4	+ 8.6	+ 3.8
Argentina	+ 1.0	—	+ 6.7	—
Canada	+ 3.2	+ 0.7	+ 16.8	+ 2.0
United States: Bur. of Agric. Economics	+ 2.8	—	+ 35.4	—
United States: Bur. of Labor	+ 2.6	+ 0.9	+ 34.9	+ 9.3
Finland	+ 0.0	+ 2.7	+ 0.0	+ 1.1
Hungary	+ 1.4	+ 1.2	+ 23.3	+ 13.3
Italy	+ 2.1	+ 3.2	+ 15.0	+ 8.5
New Zealand	— 4.6	—	— 2.3	—
Netherlands	+ 2.0	+ 1.4	+ 15.8	+ 3.9
Poland . . . . .	...	...	...	...
Yugoslavia . . . . .	...	...	...	...
plant products	— 3.6	— 0.2	+ 13.0	—
livestock products	+ 1.9		+ 0.7	+ 0.2

INDEX-NUMBERS OF PRICES OF AGRICULTURAL PRODUCTS AND OF COMMODITIES BOUGHT BY THE FARMER ¹⁾

DESCRIPTION	April	March	Feb.	Jan.	Dec.	Nov.	April	April	Year	
	1935	1935	1935	1935	1934	1934	1934	1933	1934	1933
Germany										
(Statistisches Reichsamt)										
1913 = 100.										
Foodstuffs of plant origin	114.1	114.1	113.8	113.2	112.9	112.7	103.5	97.8	108.7	98.7
Livestock	79.2	76.7	74.9	76.2	76.8	78.5	64.5	59.9	70.9	64.3
Livestock products	103.1	102.8	107.2	108.8	109.5	110.5	101.1	85.3	105.0	97.5
Feeding stuffs	104.8	105.2	105.0	105.2	105.0	104.7	95.3	83.4	102.0	86.4
Total agricultural products	100.0	99.3	99.7	100.3	100.5	101.1	90.5	81.8	95.9	86.8
Fertilizers ¹⁾	67.3	67.3	67.3	67.0	65.3	65.0	71.3	71.9	68.6	70.2
Agricultural dead stock	111.0	111.0	111.0	111.0	111.0	111.0	110.0	111.1	111.1	111.6
Finished manufactures ("Konsumgüter")	124.1	124.4	124.5	123.5	122.5	122.1	115.3	109.2	117.3	111.7
Wholesale products in general	100.8	100.7	100.9	101.1	101.0	101.2	95.8	90.7	98.4	93.3
England and Wales										
(Ministry of Agriculture and Fisheries)										
Average for corresponding months of 1911-13 = 100.										
Agricultural products ²⁾	126	119	122	124	120	120	116	109	119	111
Feeding stuffs	90	92	92	98	98	96	83	86	91	85
Fertilizers	88	88	88	88	89	89	90	90	90	90
Wholesale products in general ³⁾	98.9	97.5	98.1	98.4	97.4	95.3	95.3	92.4	96.3	93.7
Argentina										
(Banco de la Nación Argentina)										
1926 = 100.										
Cereals and linseed	66.7	65.9	65.1	68.8	71.1	69.2	60.0	51.7	68.1	54.4
Meat	77.9	78.5	79.1	82.1	83.5	83.4	76.0	63.7	78.5	65.9
Hides and skins	77.8	74.4	74.4	75.4	73.0	69.6	78.4	53.2	71.6	63.9
Wool	65.4	64.4	65.7	68.0	68.3	72.9	86.2	41.9	84.3	54.6
Dairy products	75.0	75.8	75.9	66.8	66.4	65.5	57.9	49.4	62.3	57.4
Forest products	92.8	91.9	91.9	84.4	87.9	70.1	70.9	71.8	73.1	72.5
Total agricultural products	69.7	69.0	68.5	71.1	72.5	70.8	65.3	52.8	70.5	56.9
Canada										
(Internal Trade Branch of the Dominion Bureau of Statistics)										
1926 = 100.										
Field products (grain, etc.)	59.8	56.4	55.7	55.7	56.0	55.7	48.7	40.7	53.9	45.7
Livestock and livestock products	72.9	73.3	72.6	71.0	70.9	70.4	66.6	56.3	67.6	59.6
Total Canadian farm products	64.7	62.7	62.0	61.4	61.6	61.2	55.4	46.5	59.0	51.0
Fertilizers	75.8	75.8	75.8	75.8	75.8	75.8	79.7	71.7	76.2	73.8
Consumers' goods (other than foodstuffs, etc)	75.7	76.1	76.7	76.7	76.7	76.7	77.3	74.6	77.2	76.0
Wholesale products in general	72.5	72.0	71.9	71.4	71.2	71.2	71.1	65.3	71.6	67.2

¹⁾ For an explanation of the method of calculation of the index-numbers, reference should be made to the Institute's publication *Index-numbers of Prices of Agricultural Products and other Price-indices of interest to the Farmer* (Rome, 1930) as well to the *Crop Report* (January 1932, pages 77 to 79; July 1932, page 502; March 1934, page 231; December 1934, page 696).

²⁾ Revised index-numbers due to the Wheat Act payments and, from 1st. September the Cattle Emergency Act payments.

³⁾ Calculated by the *Statist*, reduced to base-year 1913 = 100.

DESCRIPTION	April	March	Feb.	Jan.	Dec.	Nov.	April	April	Year	
	1935	1935	1935	1935	1934	1934	1935	1933	1934	1933
United States										
(Bureau of Agricultural Economics)										
Average 1909-10 to 1913-14 = 100.										
Cereals	115	111	114	115	116	109	77	47	93	62
Cotton and cottonseed	103	102	108	108	109	107	94	49	99	64
Fruits	105	90	90	87	85	94	96	69	100	74
Truck crops (market garden crops)	156	162	188	117	130	107	98	74	102	105
Meat animals	117	117	105	96	73	72	64	57	68	60
Dairy products	117	114	121	112	107	105	91	72	96	82
Chickens and eggs	105	97	119	114	119	125	72	58	89	75
Miscellaneous	92	92	101	111	113	123	96	56	108	83
Total agricultural products	111	108	111	107	101	101	82	58	90	70
Commodities purchased 1)	128	127	127	126	126	126	120	101	122	109
Agricultural wages 1)	94	—	—	86	—	—	88	72	88	80
United States										
(Bureau of Labor)										
1926 = 100.										
Cereals	87.9	82.8	87.4	88.8	91.5	87.2	58.8	44.8	74.5	53.1
Livestock and poultry	85.9	85.8	78.4	73.3	57.2	54.0	49.2	41.0	51.5	43.4
Other farm products	74.5	72.1	76.8	76.6	75.1	75.8	65.7	46.7	70.5	55.8
Total agricultural products	80.4	78.3	79.1	77.6	72.0	70.8	59.6	44.5	65.3	51.4
Agricultural implements	93.6	93.6	93.6	92.7	92.7	91.9	85.2	83.1	89.6	83.5
Fertilizer materials	66.0	66.3	66.2	66.5	65.3	64.6	68.7	62.9	67.1	65.9
Fixed fertilizers	72.9	72.8	72.8	73.3	75.4	73.5	72.7	60.0	72.5	64.5
Cattle feed	104.9	102.2	109.0	116.2	123.1	108.2	76.1	49.5	89.4	57.9
Non-agricultural commodities	79.9	79.5	79.4	78.9	77.8	77.7	76.2	63.7	76.9	69.0
Wholesale products in general	80.1	79.4	79.5	78.8	76.9	76.5	73.3	60.4	74.9	65.9
Finland										
(Central Bureau of Statistics)										
1926 = 100.										
Cereals	79	79	80	80	79	78	83	90	82	88
Potatoes	81	81	81	68	56	56	49	93	49	77
Modder	63	63	63	64	64	64	87	66	72	72
Meat	76	78	78	76	73	70	66	68	71	64
Dairy products	79	78	80	82	86	88	72	67	75	75
Total agricultural products	75	75	76	75	76	76	73	71	73	74
Wholesale products in general	90	90	90	90	90	90	89	88	90	89
Hungary										
(Central Bureau Statistics)										
1913 = 100.										
Agricultural and livestock products	74	73	75	75	72	71	60	68	—	—
Wholesale products in general	86	85	86	86	84	83	75	80	—	—
Italy										
(Consiglio Provinciale dell'Economia Corporativa di Milano)										
1913 = 100.										
National agricultural products	331.7	324.8	317.9	315.6	316.2	314.9	288.4	275.5	297.9	280.7
Wholesale products in general	298.7	289.4	281.5	280.2	279.2	277.2	275.2	282.2	275.8	283.4
New Zealand										
(Census and Statistics Office)										
Average 1909-13 = 100.										
Dairy products	77.6	87.1	87.6	77.8	78.3	76.3	74.2	76.4	77.5	84.0
Meat	162.1	162.5	163.7	162.5	163.6	147.6	149.0	110.5	152.2	120.7
Wool	78.3	80.1	78.1	79.5	75.0	73.4	117.3	64.7	110.0	69.8
Other pastoral products	86.8	92.1	79.9	76.1	77.9	81.7	92.4	55.6	80.2	74.5
All pastoral and dairy products	100.7	105.9	105.2	100.4	98.9	93.9	104.9	79.9	104.5	88.4
Field products	129.3	125.7	123.7	126.3	121.5	121.4	118.8	114.9	120.6	115.8
Total agricultural products	101.6	106.5	105.7	101.2	99.3	94.4	104.1	80.9	104.7	89.2

1) 1910-1914 = 100.

DESCRIPTION	April 1935	March 1935	Feb. 1935	Jan. 1935	Dec. 1934	Nov. 1934	April 1934	April 1933	Year	
									1934-35 2)	1933-34 2)
Norway										
(Kegl. Selskap for Norges Vel)										
Average 1909-14 = 100.										
Cereals	144	144	144	141	137	136	100	119	126	112
Potatoes	147	153	144	132	115	111	94	80	132	103
Pork	93	93	89	88	88	89	70	80	83	81
Other meat	140	142	139	141	136	129	126	115	137	110
Eggs	79	99	93	82	109	129	72	65	92	85
Dairy products	135	134	133	133	133	132	130	119	132	126
Concentrated feeding stuffs	117	115	118	120	121	120	102	99	109	96
Maize	101	101	108	110	110	110	87	85	101	83
Fertilizers	78	77	76	74	74	72	88	92	81	87
Netherlands										
(Bureau of Agriculture)										
Average 1924-25 to 1928-29 = 100.										
Plant products	54	52	54	54	55	58	62	37	59	42
Livestock products	49	48	48	49	49	48	57	50	53	51
Total agricultural products	50	49	49	50	51	51	58	47	55	49
Agricultural wages	71	71	71	71	71	71	74	83	74	81
Wholesale products in general 1)	51.4	50.7	52.1	52.8	52.8	52.1	53.5	48	4) 52.8	4) 50.1
Poland										
(Central Bureau of Statistics)										
1928 = 100.										
Raw plant products . . . . .	...	33.2	33.9	33.1	33.2	32.3	34.5	45.8	35.6	41.1
Meat animals . . . . .	...	31.6	29.8	29.5	32.5	33.9	37.3	45.0	36.7	42.5
Dairy products and eggs . . . . .	...	37.7	39.0	40.4	43.3	47.1	45.1	44.8	41.2	46.7
Products directly sold by farmers . . . .	...	33.5	33.5	33.3	34.8	35.6	37.4	45.3	37.0	42.6
Flour and groats . . . . .	...	37.7	38.5	38.3	38.8	38.4	36.3	54.7	38.8	47.8
Meat and lard fat . . . . .	...	34.6	33.5	34.9	36.7	38.2	47.1	51.6	43.5	49.8
Sugar, alcohol, beer . . . . .	...	79.1	79.3	85.6	85.6	85.6	90.1	90.2	88.6	90.3
Products of agricultural industries . . . .	...	50.2	50.1	52.6	53.4	53.8	57.7	65.3	56.7	62.4
Total agricultural products . . . . .	...	41.8	41.7	42.8	44.0	44.6	47.4	55.2	46.8	52.4
Commodities purchased . . . . .	...	66.8	66.9	67.8	68.5	68.3	72.0	72.9	70.6	72.9
Wholesale products in general . . . . .	...	52.1	52.2	52.7	53.5	53.6	56.8	59.9	55.8	59.1
Yugoslavia										
(National Bank of the Kingdom of Yugoslavia)										
1926 = 100.										
Plant products	58.9	61.1	60.9	62.9	57.9	59.1	52.1	62.1	57.4	57.2
Livestock products	56.3	55.2	57.1	58.6	55.8	55.6	56.7	56.2	55.4	57.1
Industrial products	65.3	64.8	66.0	65.4	64.9	65.3	69.3	72.7	67.4	70.8
Wholesale products in general	62.9	63.0	63.9	64.4	62.3	62.7	63.0	66.3	63.2	64.4

1) Calculated by the the Central Statistical Bureau of the Netherlands, reduced to the base 1925-1929 = 100 — 2) Agricultural year: 1st April-31 March. — 3) Agricultural year: 1st July-30 June. — 4) Calendar year.

Prof. ALESSANDRO BRIZI, Segretario generale dell'Istituto, Direttore responsabile.

28-V-1935.

MONTHLY CROP REPORT AND AGRICULTURAL STATISTICS

The following explanations refer to crop conditions quoted in the crop notes and in the tables. — Crop condition according to the system of the country: Germany, Austria, Hungary, Luxemburg and Czechoslovakia: 1 = excellent, 2 = good, 3 = average, 4 = bad, 5 = very bad; France: 100 = excellent, 70 = good, 60 = fairly good, 50 = average, 30 = bad; Estonia, Lithuania, Poland and Sweden: 5 = excellent, 4 = good, 3 = average, 2 = bad, 1 = very bad; Netherlands: 90 = excellent, 70 = good, 60 = fairly good, 50 = below average; U. S. S. R.: 5 = good, 4 = above the average, 3 = average, 2 = below average, 1 = bad; Canada: 100 = crop condition promising a yield equivalent to the average yield of a long series of years; United States: 100 = crop condition which promises a normal yield; Egypt: 100 = from June 1934, crop condition which promises a yield equal to the average yield of the last five years. — For other countries the system of the Institute is employed: 100 = crop condition which promises a yield equal to the average of the last ten years.

CEREALS

WHEAT. — As usual, the world wheat trade in April, figures for which are now known, revealed an appreciable contraction when compared with the preceding months. This is a seasonal variation arising from the caution with which purchases are made at the time when the new crop prospects are beginning to take shape. Although reduced, the volume of world shipments in April this year is still larger than that of April 1934, but total net exports during the first nine months of the present year (August to April) at 393 millions bushels remain considerably below the corresponding figure for last year. The reason for which our March estimate, which anticipated total exports this year of 570 millions bushels may prove to be rather above the total which will actually

World net exports of wheat (including flour in terms of wheat)

(Million bushels)

Months	1934-35	1933-34	1932-33	1931-32	1930-31	1929-30
August	51	45	41	66	77	71
September	42	51	48	78	74	57
October	50	46	62	74	84	60
November	43	41	54	67	77	51
December	38	51	60	64	59	50
January	42	48	62	62	54	48
February	41	44	64	73	70	45
March	48	50	64	74	67	50
April	38	35	40	70	62	42
May	—	44	52	67	81	50
June	—	45	42	59	67	51
July	—	46	44	45	52	53
Total August-April	393	411	495	628	624	474
Total May-July . . . . .	...	135	138	171	200	154
Total Season 1)	570	546	633	799	824	628

1) Estimate March, 1935.

be reached at the end of July, were outlined last month. Even if we count on an export movement appreciably larger than that of 1934 in the three remaining months of the year, May to July, there is now no doubt that the total will only reach with difficulty the neighbourhood of the 546 million bushels which were exported in 1933-34.

The international wheat movement has been influenced by the very weak import demand from Europe which has consistently fallen much below the forecasts and which was very much below the minimum recorded last season.

Net imports of wheat into Europe (including flour in terms of wheat).

(Million bushels)

Months	Season 1934-35			Season 1933-34		
	United Kingdom and Irish Free State	Other European countries	Total Europe	United Kingdom and Irish Free State	Other European Countries	Total Europe
August	18	14	32	19	15	34
September	20	16	36	22	13	35
October	18	13	31	23	14	37
November	17	12	29	22	13	35
December	20	12	32	18	10	28
January	12	10	22	14	10	24
February	16	10	26	16	11	27
March	20	11	31	22	15	37
April	17	10	27	21	13	34
May	—	—	—	20	14	34
June	—	—	—	19	14	33
July	—	—	—	21	14	35
Total August-April	158	108	266	177	114	291
Total May-July . . . . .	...	...	...	60	42	102
Total season	1) 225	1) 165	1) 390	237	156	393

1) Estimate March 1935.

Net imports of the European importing countries during last April were in fact only 27 million bushels and during the first nine months of the year they reached only 266 million, thus showing a decrease of 25 million from the corresponding total of 1933-34. Although a more sustained demand is expected in the last three months of the season, May to July, as a result of the exhaustion of stocks and the lateness of the crops in several importing countries, total imports in the present year must, it seems, fall short of that of last year by several millions bushels.

The present situation and the prospects of the growing crops in the northern hemisphere may be outlined as follows according to the information received up to the middle of June.

In Europe, the month of May was irregular and variable according to regions and was abnormally cold everywhere. In the beginning, the middle and, in some places, even the end of the month, there were frosts of varying

intensity. At the end of the month and during the first half of June temperature became more normal for the season but it remained below normal in Northern Europe and in much of Central Europe. Rainfall was very irregular. In northern and central areas drought predominated almost throughout May, but plentiful and, in some places, excessive rain fell at the end of the month and during the first half of June. In the south, where many areas were suffering as a result of the persistent April drought, rain fell, often in storms, in the second half of May and, also, in some places during the first half of June.

Taken altogether, weather conditions during May and the first half of June were not favourable to earing, flowering and to the growth of wheat in general. The cold weather brought a general delay in growth so that the crops were in mid-June one or two weeks behind normal. Numerous complaints have been received concerning damage caused by frosts, storms, winds, hail and rust but it does not seem that the actual losses appreciably exceed the average.

In the European countries as a whole the condition of wheat at the beginning of June was below that at the beginning of May and in several countries the decline thus produced was even considerable; despite this the situation in most cases remained better than it was on 1 June last year. The first half of June was characterized by weather on the whole a little more favourable than in May, save in some western areas where bad weather, with storms, violent winds and excessive rain, prevailed. On the basis of this information and taking into account the increase in areas cultivated to wheat this year, a general summing-up of the position in all the European countries allows a slightly larger production to be expected than the already large one obtained last year.

European wheat production.
(million bushels).

Year	Importing Countries	Exporting Countries	Total
1934	1,194	338	1,532
1933	1,293	456	1,749
1932	1,213	279	1,492
1931	974	463	1,437
1930	915	445	1,360
1929	1,073	378	1,451
Average 1924-28	930	345	1,275

At this time of year any numerical evaluation of the total volume of the coming crops is still subject to appreciable departures from the final estimate; this year more than ever the final result will reflect the weather during ripening and up to the period of harvest, owing to the delay in development due to the weather in the past spring. We have, however, sought, as at the same

date last year, to make a preliminary estimate of the European crops, taking as base the areas cultivated and the approximate yields indicated by crop condition in the various countries and assuming that the weather will be normal until the harvest. This calculation gives for the importing countries a total of 1,175 million bushels and for the exporting countries (the four Danubian countries, Poland and Lithuania) a total of 405 million; in all the production of Europe would thus be 1,580 million bushels. The final figures of European crops in the last few years are given for comparison.

The total European crop, on the basis of conditions in mid-June, would therefore be about 50 million bushels larger than that of 1934, thus exceeding all the crops so far obtained, excepting the maximum of 1933. The total production of the importing countries would, according to this calculation, be very little less than last year, while the total for the exporting countries would exceed by a wide margin the small figure of last year and be practically equivalent to the five-year average.

In the U. S. S. R. conditions during May and the first half of June was generally favourable in nearly all parts. Though temperature was in general rather low during May and involved a delay in the growth of the crops, it began to rise at the end of the month and became nearly normal during the first half of June. After the middle of May there were frequent and even plentiful rains with the result that the complaints of drought, which were so common and general at this time of the year in previous springs, are this year heard only in some parts in the south. Spring sowings were done in good conditions and considerably ahead of the usual time. By 1 June they were practically complete. Both winter and spring crops must have benefited especially from the May rains. The reports on the situation of all cereal crops on 1 June indicated an average or better than average condition in 83 % of the reports. Having regard thus, on the one hand, to the increase in wheat sowings of about two and a half million acres and, on the other, to the satisfactory condition of the crops in the middle of June, the outlook for the coming harvest gives promise of a distinctly higher outturn than the very satisfactory one of last year. The outcome naturally still depends on the course of the season and especially on the rainfall of the end of June and July, which is so vital for the crop of spring wheat which makes up nearly two-thirds of all wheat grown in the U. S. S. R.

The estimate of the winter wheat crop in the United States, calculated on the basis of crop condition on 1 June, indicates an outturn of 441 million bushels, an increase of 10 millions on the estimate of the preceding month. As the weather during May was much more favourable, a much larger increase was expected in the official estimate of the crop, which appears rather low in comparison with the estimates made by the commercial information agencies. The winter wheat crop of 1935 thus appears, according to this new estimate, to be a little larger than the last two very poor crops of 1934 (405 million bushels) and 1933 (351 million), but it is still nearly 30 % below the average outturn in the years 1928 to 1932, which was 618 million bushels. The rains and warmth of the first half of June were favourable for the growth of winter

wheat, and it is possible that they may still involve an appreciable increase though without affecting the prospects substantially.

The prospects of spring wheat production are distinctly satisfactory and they partly compensate for the low winter wheat crop. Crop condition on 1 June was one of the highest of recent years and both moisture and temperature in the first three weeks of that month continued to be favourable so that there were grounds for expecting a crop distinctly larger than the small crops of 1934 and 1933 and possibly larger than the 1928-32 average of 242 million bushels. If this result is confirmed the total production of the United States will this year not only amply meet the requirements for internal consumption but leave an appreciable surplus for export.

In Canada also, abundant and well distributed rains that fell in May and the first three weeks of June greatly benefited the first stages of growth. Sowings were late this year and this involves additional risks for the crop; until the middle of June, however, the crop was in satisfactory condition almost everywhere and the moisture reserves from the spring rains were sufficient over a large part of the Prairie Provinces to satisfy the vegetative requirements of the plants for one or two weeks. If the rains in July are normal it may be expected that in Canada the crop will be distinctly larger than those of the last two years, which were compromised by the drought in spring and were each only about 280 million bushels.

Owing to the damage at the time of harvesting, the last estimate for India shows a reduction from the previous estimate of 379 millions to 367 millions. Production this year remains, however, 15 millions larger than that of last year, which was practically the same as the 1929-33 average. It is amply sufficient to cover internal requirements and might possibly offer a small surplus for export. In the other Asiatic countries good crops are expected in Turkey and Syria while in Palestine, where drought compromised the crops in the southern districts, production will not greatly exceed the average. Crop prospects in Japan are also practically average.

In North Africa the crop appears somewhat better than was expected a month ago. In Algeria, according to the first provisional estimate, which is normally below the final estimate, production of wheat should attain 33 million bushels, very much less than the excellent crop of 1934 (43.5 million) but still above the five-year average (30.5 million). In Morocco the rains that fell tardily in May brought only a small improvement in the crop, which is reported to be mediocre. Prospects in Tunisia are also below average. In Egypt, on the other hand, production is expected to be appreciably larger than in 1934.

Sowings in the southern hemisphere were hindered by drought in both Argentina and Australia.

G. CAPONE.

Germany: Cold weather prevailed during the first three weeks of May and temperature was even lower than in April. Snow fell in some areas. Little rainfall accompanied this cold wave so that conditions were unfavourable. Rain fell and temper-

* St. 6 *Ingl.*

ature rose only in the last decade of May, but up to the present the improvement in the weather has not been reflected in the crops. According to official accounts, the situation of winter wheat has worsened compared with last month but it is still better than it was at the same time a year ago. Crop condition of spelt on 1 June was 2.4 against 2.3 a month earlier and 2.7 on 1 June 1934.

Austria: In May cold weather prevailed. In the early part of the month snow fell in the Central Alps and was followed by intense nocturnal frosts. After a period of warmer days, toward the middle of May temperatures again fell. Toward the end of May abundant rain fell with hail here and there.

At the beginning of June winter wheat was short in the straw but vigorous. Winter rye is quite dense. On the plains flowering began. In the mountain districts at average height late frosts so greatly damaged winter rye that growers used it as green fodder; winter barley had a good appearance but vegetation was a little backward.

Spring cereals had generally a good appearance but the cold weather caused a delay in their growth (particularly in the case of barley). Oats are much infested by weeds.

Belgium: In May the weather was abnormal: nocturnal frosts, drought, cold, biting winds and even falls of snow. The end of the month was marked by violent storms, which caused serious damage in some districts.

The crops in general suffered from the unfavourable weather. Growth was retarded by drought and cold and did not recover until the end of the month. Cereals in general did not, however, suffer excessively.

Bulgaria: Weather was rather cold in the first half of May. At the beginning of the month, there were severe frosts in the northern parts of the country. The second half of the month was warmer. Rainfall was generally inadequate, especially in the second half of the month and drought was reported in some areas.

At the end of the month, bad weather, consisting chiefly of torrential rains and hailstorms, caused considerable damage in the Vratza and Plevan areas to the cereal sowings which were replaced by maize. Brown rust, which has appeared in the cereal crops in some districts, is causing serious concern for the harvest, which was previously expected to be large.

The preliminary estimates of the General Statistical Department of Bulgaria of the 1935 crop compared with that of 1934 and the average of the years 1929 to 1933 are as follows:

	1935 *	1934	Average 1929-1933	% 1935 1934 = 100	% 1935 Average = 100
	(1000 centals)				
Wheat	37,313	24,947	30,951	149.6	120.6
Rye	5,170	3,682	5,524	140.4	93.6
Barley	7,266	4,090	7,184	177.6	101.2
Oats	2,873	1,610	2,559	178.4	112.2
Meslin	2,098	1,875	2,569	111.9	81.7
Spelt	220	156	251	141.8	88.0

* Provisional estimates calculated from crop condition at the beginning of May and subject to probable reduction consequent on the heavy losses suffered toward the end of that month.

Area and Crop Condition.

[illegible]

AREA SOWN					CROP CONDITION (%)									
COUNTRIES	1935	1934	Average 1929 to 1933	% 1935										
				1934 = 100	Aver. = 100	I-VI-1935			I-V-1935			I-VI-1934		
						Thousand acres	a)	b)	c)	a)	b)	c)	a)	b)	c)
RYE														
Germany	11,069	11,098	11,257	99.7	98.3	2.8	—	—	2.6	—	—	2.9	—	—
*Austria . . . . .	...	909	897	...	...	2.0	3.0	—	1.9	—	—	2.7	—	3.1
Belgium	525	544	561	96.6	93.6	2.3	—	—	2.1	—	—	2.4	—	—
Bulgaria	429	476	570	90.2	75.3	—	—	—	—	—	—	—	—	—
Spain	1,401	1,451	1,512	96.6	92.7	—	—	—	—	—	—	—	—	—
*Estonia . . . . .	...	364	358	...	...	—	—	85	—	—	—	120	—	—
Finland	628	575	532	103.6	118.0	—	—	—	—	—	—	—	—	—
France 1)	1,660	1,682	1,807	98.7	91.9	—	—	—	72	—	—	—	—	—
Greece	185	204	162	90.6	114.1	—	—	—	—	—	—	—	—	—
Latvia	647	654	608	99.0	106.5	—	—	—	—	—	—	—	—	—
Lithuania	1,260	1,216	1,198	103.6	105.2	103	—	—	110	—	—	—	—	—
Luxemburg	19	19	19	100.0	101.4	2.0	—	—	2.2	—	—	2.0	—	—
Netherlands	502	463	445	108.3	112.7	—	—	3) 68	—	—	—	3) 77	—	—
Poland	14,100	13,963	14,211	101.0	99.2	3.2	—	—	3.0	—	—	—	—	2.9
Romania	60	61	66	98.5	91.1	—	3.0	—	—	—	—	—	—	2.5
*Sweden	951	886	872	107.4	109.1	—	—	—	—	—	—	—	—	—
*Switzerland . . . . .	...	554	544	...	...	—	—	2.7	—	—	—	3.3	—	—
Czechoslovakia	2,417	2,415	2,530	100.1	95.5	2.5	—	—	105	2.5	—	—	—	96
Yugoslavia	55	58	62	95.0	89.5	—	—	—	—	—	—	—	—	3.3
Total Europe	542	519	516	104.4	105.2	—	—	—	—	—	—	—	—	—
U. S. S. R.	36,450	36,284	36,928	100.5	98.7	—	—	—	—	—	—	—	—	—
Canada	58,519	60,975	64,626	96.0	90.5	—	—	—	—	—	—	—	—	—
United States	6) 604	4) 587	4) 683	102.9	88.4	—	—	99	—	—	94	—	—	59
Total America	7) 135	4) 148	4) 236	91.3	57.3	—	—	97	—	—	—	—	—	75
*Turkey	6) 3,474	4) 1,937	4) 3,104	179.3	111.9	84.2	—	—	—	—	82.0	—	—	43.5
Algeria	4,213	2,672	4,023	157.6	104.7	—	—	—	—	—	—	—	—	—
*Algeria	588	1,204	644	—	—	—	—	—	—	—	—	—	—	—
GRAND TOTAL	3	3	4	83.5	77.6	—	100	—	—	—	—	—	—	—
BARLEY														
Germany	3,925	4,030	3,876	97.4	101.3	2.7	—	—	2.5	—	—	2.9	—	—
*Austria . . . . .	...	19	19	...	...	2.3	—	—	2.1	—	—	2.8	—	—
Belgium . . . . .	...	397	397	...	...	2.3	—	—	2.0	—	—	2.7	—	—
Bulgaria	78	81	71	96.3	111.0	—	—	—	—	—	—	—	—	—
Spain	509	569	602	89.5	84.5	—	—	—	—	—	—	—	—	—
France 1)	4,536	4,502	4,629	100.8	98.0	—	—	—	—	—	—	—	—	—
Scotland	438	416	424	105.5	103.4	—	—	—	72	—	—	—	—	—
Greece	1,370	1,457	1,413	94.0	97.0	—	—	—	72	—	—	—	—	—
*Lithuania	89	96	85	92.5	105.0	—	100	—	—	—	—	—	—	95
Luxemburg	544	588	508	92.4	107.1	—	—	—	—	—	—	—	—	—
Netherlands . . . . .	...	503	495	...	...	113	—	—	—	—	—	106	—	—
Poland	6	6	10	99.4	66.1	2.3	—	—	2.2	—	—	2.5	—	—
Romania	99	80	64	124.1	155.3	—	—	3) 68	—	—	—	—	—	70
*Switzerland	77	77	131	100.3	59.3	—	—	2.9	—	—	2.7	—	—	2.7
Czechoslovakia	2,907	2,867	2,903	101.4	100.1	3.2	—	—	—	—	—	—	—	—
Yugoslavia	227	199	231	114.0	98.3	—	—	—	—	—	—	—	—	—
Total Europe	14	11	17	123.2	84.2	—	—	—	—	—	—	—	—	—
U. S. S. R.	1,594	1,633	1,723	97.6	92.5	—	—	—	2.5	—	—	3.0	—	—
Canada	594	589	617	101.0	96.3	—	—	—	—	—	—	—	—	—
United States . . . . .	...	14	18	...	...	—	100	—	106	—	—	100	—	—
Total America	17,017	17,201	17,304	98.9	98.3	—	—	—	—	—	—	—	—	—

COUNTRIES	AREA SOWN						CROP CONDITION (†)								
	1935	1934	Average 1929 to 1933	% 1935											
				1934 = 100	Aver. = 100	I-VI-1935			I-V-1935			I-VI-1934			
						Thousand acres		a)	b)	c)	a)	b)	c)	a)	b)	c)
Canada	7) 3,798	4) 3,612	4) 4,538	105.1	83.7	—	—	95	—	—	—	—	—	—	83
United States . .	8) 11,954	4) 7,144	4) 12,194	167.3	98.0	84.3	—	—	—	—	—	—	—	—	44.7
<i>Total America . .</i>	<i>15,752</i>	<i>10,756</i>	<i>16,732</i>	<i>146.5</i>	<i>94.1</i>	—	—	—	—	—	—	—	—	—	—
*Japan	—	1,860	2,088	—	—	—	f)	—	—	—	—	—	f)	—	—
Syria and Lebanon	680	611	810	111.2	83.9	—	—	—	—	—	—	—	—	—	—
*Turkey	w) 1,987	3,294	3,417	—	—	—	—	—	—	—	—	—	—	—	—
<i>Total Asia . . .</i>	<i>680</i>	<i>611</i>	<i>810</i>	<i>111.2</i>	<i>83.9</i>	—	—	—	—	—	—	—	—	—	—
Algeria	3,047	3,131	3,431	97.3	88.8	—	100	—	—	—	—	—	—	100	—
Cyrenaica	151	110	84	137.4	178.8	—	—	—	—	—	—	—	—	—	—
Egypt	275	284	342	96.7	80.5	114	—	—	107	—	—	—	—	—	98
French Morocco .	3,954	3,844	3,344	102.9	118.2	—	—	—	—	—	—	—	—	—	—
Tunisia	1,532	988	1,221	155.0	125.4	—	—	—	—	—	—	—	—	—	—
<i>Total Africa . . .</i>	<i>8,959</i>	<i>8,357</i>	<i>8,422</i>	<i>107.2</i>	<i>106.4</i>	—	—	—	—	—	—	—	—	—	—
GRAND TOTAL . .	42,408	36,925	43,268	114.8	98.0	—	—	—	—	—	—	—	—	—	—
OATS															
Germany	6,945	7,773	8,317	89.3	83.5	2.9	—	—	—	—	—	—	2.9	—	—
*Austria	—	743	759	—	—	2.3	—	—	—	—	—	—	2.6	—	—
Bulgaria	264	312	328	84.5	80.4	—	—	—	2.1	—	—	—	—	—	—
Spain	1,619	1,877	1,917	86.3	84.5	—	—	—	—	—	—	—	—	—	—
France 1)	2,169	1,983	2,117	109.4	102.5	—	—	—	72	—	—	—	—	—	—
Scotland	6,024	6,091	6,413	98.9	93.9	—	—	—	72	—	—	—	—	—	—
Greece	830	816	862	101.7	96.3	—	—	95	—	—	—	—	—	95	—
*Lithuania	358	353	322	101.5	111.2	—	—	—	—	—	—	—	—	—	—
Luxemburg	—	812	891	—	—	110	—	—	—	—	—	—	103	—	—
Netherlands . . .	67	67	72	100.0	92.7	2.5	—	—	2.3	—	—	—	2.6	—	—
Poland	319	323	364	98.8	87.5	—	—	3) 66	—	—	—	—	—	3) 67	—
*Switzerland . . .	5,488	5,466	5,424	100.4	101.2	3.1	—	—	—	—	—	—	—	2.7	—
Czechoslovakia . .	—	25	45	—	—	—	—	95	—	100	—	—	—	85	—
Yugoslavia	1,958	1,976	2,050	99.3	95.5	2.7	—	—	—	—	—	—	2.9	—	—
<i>Total Europe . . .</i>	<i>26,107</i>	<i>27,121</i>	<i>28,259</i>	<i>96.3</i>	<i>92.4</i>	—	—	—	—	—	—	—	—	—	—
Canada	7) 14,317	4) 13,731	4) 13,051	104.3	109.7	—	—	94	—	—	—	—	—	—	85
United States . .	8) 39,108	4) 30,395	4) 39,201	128.7	99.8	84.4	—	—	—	—	—	—	—	—	47.2
Syria and Lebanon	30	32	29	93.4	104.4	—	—	—	—	—	—	—	—	—	—
*Turkey	w) 392	419	387	—	—	—	—	—	—	—	—	—	—	—	—
Algeria	440	450	554	97.8	79.4	—	—	80	—	—	—	—	—	100	—
French Morocco .	74	65	83	112.2	89.0	—	—	—	—	—	—	—	—	—	—
Tunisia	74	49	86	150.0	85.9	—	—	—	—	—	—	—	—	—	—
<i>Total Africa . . .</i>	<i>588</i>	<i>564</i>	<i>723</i>	<i>103.9</i>	<i>81.5</i>	—	—	—	—	—	—	—	—	—	—
GRAND TOTAL . .	80,150	71,843	81,263	111.6	98.6	—	—	—	—	—	—	—	—	—	—

(†) See explanation according to the various systems, page 409. — *) Countries not included in the totals. — a) Above the average. — b) Average. — c) Below the average. — d) Very good. — e) Good. — f) Average. — g) Bad. — h) Very bad. — m) Not including U. S. S. R. — n) Including U. S. S. R. — w) Winter crop. — s) Spring crop. — 1) Estimate of 1 May 1935. — 2) Almost half of this area represents resowings of winter wheat. — 3) Middle of the month. — 4) Area harvested. — 5) Including spelt. — 6) Area expected to be harvested. — 7) Area to be planted according to farmers' intentions on 1 May 1935. — 8) Area to be harvested, calculated on farmers' intentions on 1 March 1935. — 9) Fourth estimate. — 10) Average 1930 to 1933. — 11) Year 1933.

	1935 *	1934	Average 1929-1933	% 1934 = 100	% 1935 Average = 100
	(1,000 bushels)				
Wheat	62,188	41,577	51,584	149.6	120.6
Rye	9,232	6,576	9,865	140.4	93.6
Barley	15,139	8,522	14,966	177.6	101.2
Oats	8,977	5,032	7,997	178.4	113.2
Meslin	3,618	3,233	4,429	111.9	81.7
Spelt (1000 lb.)	22,000	15,600	25,100	141.8	88.0

* Provisional estimates calculated from crop condition at the beginning of May and subject to probable reduction consequent on the heavy losses suffered toward the end of that month.

Spain: The following are the preliminary estimates of the production of cereals in Spain with comparisons for 1934 and the average.

	1935	1934	Average 1929 to 1933	% 1934 = 100	% 1935 Average = 100
	(000 bushels)				
Wheat	149,533	173,600	151,562	86.1	98.7
Rye	24,194	22,176	22,438	109.1	107.8
Barley	85,469	129,161	104,914	66.2	81.5
Oats	34,348	51,969	47,133	66.1	72.9

	(000 centals)				
Wheat	89,721	104,162	90,939	86.1	98.7
Rye	13,548	12,419	12,565	109.1	107.8
Barley	41,022	61,996	50,358	66.2	81.5
Oats	10,999	16,630	15,083	66.1	72.9

Estonia: During the first two decades of May the weather was very cool and temperatures rose only in the third decade. In May there was very little rain and the drought was unfavourable to work in the fields as well as to the growth of the crops. In consequence of these rather unfavourable circumstances condition of winter wheat was not good and yields were expected to be below the average of the past ten years.

Irish Free State: The weather in May was generally favourable for outdoor work. Rainfall was unusually low for May.

The crops were retarded to some extent by lack of moisture and by a spell of unusually cold weather but otherwise were satisfactory.

Sowings of spring cereals were carried out in satisfactory conditions.

France: During the last three weeks of May and the first decade of June temperature was appreciably below normal. In May it sometimes dropped to about 32°F and caused falls of snow in the Jura and frosts in some localities. Temperature rose in the last week of May but soon fell again and remained at least below normal up to 10 June.

Rainfall was also uneven. It was rather excessive in the south and east central parts during the second and third weeks of May but was insufficient in the some period in other districts. Rainy and stormy weather spread over almost the whole country in the last week of May and it continued in most areas up to 10 June.

The bad weather and the absence of heat and sun were harmful to growth and especially to flowering and earing, which began, according to district, in the first half of June. The crops are two to three weeks late. They are fairly satisfactory in appearance in the south and south-west, but uneven in the central, western, northern and eastern parts. where, in addition to the delay in vegetation and the unfavourable weather conditions in which earing and flowering are taking place, there is a spread of rust and a rather appreciable proportion of yellow wheat and where stalks do not appear to have grown well everywhere. On the whole, barley and oats are better crops than wheat.

Weather appeared to be on the point of improving on 10 June. If this continued and if the cereal crops enjoyed a period of fine, warm and sunny weather for the last stages of earing and flowering, it is certain that prospects would improve greatly. It must not be forgotten, however, that weather conditions up to the present, though not very bad, have always been abnormal and that the present delay in growth will postpone ripening and the harvest to the period of great heat which may adversely affect yields. It is thus almost certain that the crop this year will not be a large one and that yields will be below those of last year.

Opinions on the wheat crop are naturally divided. Some expect a decrease of 10 to 30 % varying according to district and reaching 20 to 25 % compared with last year's crop. The most probable outcome is a yield in the vicinity of the average. As an indication it may be pointed out that the average yield of the ten years previous to 1934 would give a crop in round figures, of 290 million bushels (180 million centals).

According to the final estimate production of wheat in 1934 was about 203,110,000 centals (338,511,000 bushels) against 217,401,000 (362,328,000) in 1933 and 173,316,000 (288,854,000) on the average of the five years ending 1932; percentages 93.4 and 117.2. This final figure confirms the revised estimate of December last and is very much higher than the preliminary figure, which was about 184 million centals (307 million bushels). Production of meslin in 1934 was about 2,166,000 centals (3,734,000 bushels) against 2,318,000 (3,996,000) in 1933 and 2,162,000 (3,728,000) on the average of the five years ending 1932; percentages 93.5 and 100.2.

Production of barley was about 22,797,000 centals (47,496,000 bushels) against 25,244,000 (52,598,000) in 1933 and 24,054,000 (50,114,000) on the average of the five years ending 1932; percentages 90.3 and 94.8. The area harvested was a little larger than in 1933 and slightly below the average (98.5 %).

Production of rye was, under an area harvested which was 93.3 % of the average, about 18,471,000 centals (32,984,000 bushels) against 19,789,000 (35,338,000) in 1933 and 18,181,000 (32,466,000) on the average of the five years ending 1932; percentages 93.3 and 101.6.

Though the area harvested was only slightly below the area harvested in 1933 and 94.6 % of the average the production was only about 96,660,000 centals (302,060,000 bushels) against 125,083,000 (390,883,000) in 1933 and 105,446,000 (329,516,000) on the average of the five years ending 1932; percentages 77.3 and 91.7. Production of buckwheat was 7,243,000 centals; percentages 109.4 and 96.3.

Great Britain and Northern Ireland: The weather during May was for the most part cold and dry with severe frosts about the middle of the month. After warm sunny weather during the first week, cold north-easterly or easterly winds became general and persisted during the greater part of the month. In the absence of rain growth

practically came to a standstill. For several nights about the 17th. of the month severe frosts were experienced all over the country and snow fell in the north and west. - Although serious damage to crops has been reported in most parts, it is evident that severe damage is frequently localised and it is too early yet to estimate the full extent of the loss sustained. In Scotland the frost was the most disastrous on record for the time of year. Conditions improved again during the last few days of the month but most crops are backward.

The cereal crops, after showing great promise at the beginning of May suffered a set-back on account of these conditions, which resulted in much discoloration, and the later spring sowings in particular showed signs of flagging. The crops are, however, healthy, and, apart from a check to growth, have sustained little material damage. An improvement was noticeable during the last few days of the month and if warm rains fell during the next few weeks, much of the set-back might be made good.

The wheat area in Great Britain is likely to show a further increase this year but that of barley will probably be less this year while the area under oats is not expected to show much change.

Greece: Beneficial rains fell in April and May almost everywhere.

At the end of May prospects for the next crop were optimistic particularly in Macedonia and Thrace. The drought that prevailed in April in Thessaly has, however, compromised the crop, which is expected to be rather poor.

Hungary: In the two weeks between 25 May and 8 June weather was very changeable, but temperature was normal. Frequent rains were recorded and, in some places, hail. The quantity of rainfall was above average in the greater part of the country.

Wheat improved generally after the beneficial rains. At the end of the first week of June it was thick and of average height. The hail which fell at the end of May inflicted serious damage in several departments.

Flowering of wheat has already occurred in several places. The frosts experienced during the spring were harmful to the formation of ears while hail caused serious damage also to rye. An extensive enquiry was made in the district of Kecskemet where the rye crop on an area of about 22,000 acres has been destroyed.

Except for the damage caused by hail, the weather was favourable for barley (winter and spring) and oats.

During the week from 9 to 15 June very hot, dry weather prevailed though with cool nights. Condition of wheat was good and grain formation satisfactory. The crop has generally a close stand and long straw. There are some complaints of damage by insects and laying. Rye is ripening; it is well developed and promises fairly good yields. On the looser soils the excessive heat caused blasting.

The first forecasts are as follows:—

	1933	1934	Average 1929-33	1934 = 100	% 1935 Average = 100
Wheat (ooo cent.)	43,196	38,895	47,124	111.1	91.7
(ooo bush.)	71,991	64,824	78,538		
Rye (ooo cent.)	15,009	13,653	16,739	109.9	89.7
(ooo bush.)	26,802	24,381	29,891		

Condition of winter barley and oats is good; cereals are approaching maturity well developed and have only in a few cases suffered from drought.

Italy: In May condition of wheat improved rapidly thanks to the rains that fell throughout the country, save in Sardinia, in the second decade. The low temperatures at the end of the month and the beginning of June greatly favoured the ripening of early varieties. In general the formation and ripening of the grain was very satisfactory; at the beginning of the third decade of May very violent winds caused serious damage on the coasts of the South and of Sicily; the situation as a whole permits expectations of a wheat crop appreciably better than it did a month ago; it is officially intimated that this crop will be considerably above that of 1934, which attained 232 million bushels. For the other winter cereals forecasts indicate crops larger than those of last season.

Latvia: The condition of winter crops on 15 May was not entirely satisfactory owing to the unfavourable weather conditions (cold 80 %, drought 20 %).

According to the reports of agricultural correspondents, crop condition of winter wheat on 15 May was average in 46.7 % of the replies, better than average in 12.4 and below average in 40.9 %. Corresponding figures for winter rye were 48.1 %, 16.2 % and 35.7 %. The unfavourable factors were cold in about 4/5 of the cases and drought in 1/5.

Sowing of spring cereals had not been started at the beginning of June.

Lithuania: Dry and cold weather predominated during the first half of May and there were night frosts. It was warmer during the second half and it rained frequently. These conditions were unfavourable for growth and as a result of the cold the condition of winter crops deteriorated.

The weather, however, was favourable for the sowing of spring cereals. The early-sown crops at first grew slowly and unevenly as a result of the cold weather but those seeded later were better. Sowing was finished by 25 May.

Luxemburg: The dry and cold weather of the first half of May hindered the growth of all crops. At the end of the month rain fell and considerably improved the condition of crops which were beginning to show the effects of the drought.

Poland: According to the Central Statistical Office temperature continued low from 5 to 15 May. Cold winds and hoar-frosts continued to have an unfavourable effect on winter and summer crops. According to 93 % of the correspondents reports temperature was insufficient for growth and in 79 % of the reports vegetation was said to be backward. Work in the fields and sowings were late (70 % of replies). In the east in a number of localities sprouting had not yet occurred by 15 May and sowings had not been completed. Conditions were generally unfavourable for sowings.

Soil moisture was reported by 70 % of the correspondents as generally sufficient for growth; in Kielce, Lublin, Nowogródek and Kraków lack of moisture was felt in places (about 50 % of replies from these départements). Considerable damage by hoarfrost was reported in 37 % of the replies and insignificant damage in 47 %.

From Kraków and Stanisławów much damage by fieldmice was reported; in addition the appearance of very many bugs was noted.

According to the State Meteorological Office temperature rose appreciably toward the end of the second decade of May and warm weather continued until almost the end of the month; in the week from 30 May to 5 June temperatures fell again and were below the average for many years. In the second and third decade of May there were rains almost everywhere, mainly stormy. The warm weather and rains

favoured growth especially in some areas in which insufficiency of soil moisture began to be felt, so that on 5 June condition of winter and spring crops was good in Silesia, Kielce and the west of Little Poland and average in the remainder of the country save in Wilno; where winter crops had suffered from frost and low temperatures in general.

In some districts frosts caused more or less severe damage.

According to the Central Statistical Office the milder weather at the beginning of June and the sufficiency of soil moisture had a considerable influence on condition of all cereals. The improvement was felt in all *départements*. Up to the end of the second decade of June the weather remained favourable, according to the State Meteorological Institute.

Romania: The warm weather in the second half of May was very favourable to cereals. Their growth was retarded by the low temperatures and cold rains of April and beginning of May but was vigorously renewed so that at the beginning of June it was almost normal (delay of 7-10 days). At the latter date ear-formation of wheat had begun. In general a good crop was expected. On the Danube plain and particularly in Oltenia, brown rust had appeared. This type of rust presented a real danger for the crops, as did also the yellow and black rusts, should the weather in June continue to be rainy and cold. Due to the too frequent rains weeds were very prevalent, particularly on the Danube plain. Despite the generally rainy weather there are some drought areas, for example in some departments of Moldavia and in the south of Basarabia.

Sowings of spring cereals took place in good conditions. The hail on 18 and 19 May and at the end of that month caused losses, which were, however, limited to cereals in a number of areas on the Danube plain and Transylvanian plateau.

Toward the end of the first decade of June official information gathered by the Ministry of Agriculture allowed a large wheat crops to be expected in Muntenia, Oltenia and Dobrogea and a smaller one in Moldavia and northern Basarabia.

On 15 June it was estimated officially that, after allowing for the damage caused to crops by frosts, the wheat harvest would amount to approximately 62,000,000 centals (103,000,000 hushels).

Sweden: Owing to the mild and wet weather experienced during the autumn, the crops grew too thickly. During the winter also the temperature remained appreciably above normal and in Southern and Central Sweden there was little snow. Conditions in spring were in the main unfavourable for crops. There were high winds and day temperatures were fairly high but there were sharp night frosts. During May temperature and rainfall were both below normal. At the beginning of June there were fairly sharp night frosts again.

Switzerland: In May growth was hindered by storms and a period of prolonged frosts. The rise in temperature toward the end of the month contributed to the growth of the crops but was accompanied by violent rains, which caused damage here and there. Condition of autumn cereals was generally regarded as good but appears on the average somewhat less satisfactory than in the preceding month. Heavy rains following on the wind caused damage, particularly to rye, which was strongly developed and dense. Growth of spring cereals was delayed by the cold weather and weeds. Condition of spelt at the beginning of June was 101 against 103 on 1 May 1935 and 94 on 1 June 1934 and that of meslin was 102, 107 and 95 respectively, according to the system of the Institute.

Czechoslovakia: In May, especially in the first half of the month, it was cold; precipitation was at times abundant but of a somewhat local character, so that in some areas in the west insufficiency of moisture was felt.

The cold weather retarded development; winter cereals, however, permitted good yields. Spring cereals in particular showed the effects of cold and in some areas also of drought but on the whole their condition on 1 June was above average and slightly better than at the corresponding date last year. Rust has been reported in several districts in the west.

Yugoslavia: The weather was changeable, wet and rather cold during the first two decades of May.

At the beginning of the month on 3 and 4 May there were sharp frosts in the Danube banovina.

During the second decade, weather became warmer and removed the anxiety felt regarding the effect on the crops.

U. S. S. R.: It was rather cold during May. According to information referring to 1 June, the course of the season approximates to the long-period average in the regions to the south last of a line joining Rostov, Perm and Sverdlovsk but it is later than usual in the regions to the north-west of this line. A delay in the growth of cereals is consequently noticeable in the latter regions. At the end of May and in the first half of June temperature was higher in nearly all parts.

In the second half of May and the first of June there were frequent and occasionally heavy rains in nearly all parts of European Russia except in the south-eastern zone (the Lower and Middle Volga, the Ural and part of the North Caucasus regions), where weather conditions, especially during the second half of May, were dry and warm.

Sowings progressed more quickly than in former years. On 25 May, 95.5 % of the Plan had been accomplished as against 88.9 % in 1934, 75.1 % in 1933, 64.4 % in 1931 and 66.6 % in 1930. On 10 June of this year, sowings were practically over, amounting to 100.4 % of the plan. In the case of spring wheat, the figure in the Plan was exceeded but it is not known how far. As the area sown to winter wheat this year is 32,000,000 acres and that of spring wheat is expected to be 57,500,000 acres, the total area under wheat this year will vary probably around 89,500,000 acres against 87,110,000 acres in 1934 and 83,130,000 on the average in the five years 1929 to 1933, increases respectively of 2.7 % and 7.6 %.

Crop condition of cereals on 1 June, according to information to the Central State Commission for Crop Estimating, was excellent in 14.0 % of the reports, good in 38.6 %, average in 31.1 %, below average in 10.5 % and poor in 5.8 %.

The cereal fields in several regions have been seriously affected by weeds and the Government has issued several measures intended to cope with this menace and calling for repeated hoeings.

Harvesting of cereals has started in Central Asia and Transcaucasus. In the North Caucasus, Crimea and the south of Ukraina it will begin, according to expectations towards the end of June.

Argentina (Telegram of 22 June): Owing to the scanty rains, sowing of cereals is late. The situation of the wheat sowings is thought to be very bad.

Canada (Telegram of 29 May): During May generous rains were received over the drought area of Saskatchewan and seeding was seriously delayed by heavy rains in parts of Central and Northern Alberta. It is reported that only a few areas in the three

Prairie Provinces then needed rain. The hatching of grasshoppers was delayed by the cool wet weather but outbreaks were expected shortly. Wheat sowing was nearly completed in Manitoba and in many areas in Saskatchewan, and the sowing of coarse grains was well advanced. In Alberta, seeding of wheat was almost completed in the southern part of the Province but in the northern areas a great deal of land intended for wheat had not been sown. The season was late for wheat seeding in northern areas and it was likely that some of the land intended for wheat would be sown to feed grains.

In many districts subsoil reserves were negligible.

(Telegram of 6 June): The seeding of wheat in the Prairie Provinces was practically completed and sowing of oats and barley was well advanced. Cool, rainy weather caused further delays in seeding in some northern districts but it was of greater general benefit in promoting strong growth and postponing the hatching of grasshoppers. The rains of the past week were particularly heavy in Eastern Saskatchewan and Manitoba, the districts which benefited being those in which rainfall during May was deficient.

While crop prospects were generally much better than in the past two years several unfavourable factors were apparent. The drought area in Central and West Central Saskatchewan was not relieved by any effective rain in the previous week and high winds led to soil-blowing. Temperatures fell two to four degrees below freezing on 5 June at several points in Manitoba and some damage may result.

Crop prospects were much more uniform than they were a year ago and the improved conditions in Southern Manitoba were a great encouragement to farmers in these ravaged areas.

(Telegram of 8 June): Crop conditions at the beginning of June (see Tables) were below those of the longtime average but they were well above the condition figures reported for the same date a year ago. The marked improvement in crop condition in the Prairie Provinces was offset to some extent in determining averages for Canada by the poor and backward state of crops in Eastern Canada and the Maritime Provinces.

Features of the crop situation in the Prairie Provinces were the lateness of the season, the recovery of the drought areas, and the uniformity of crop conditions over the three Provinces. After the reports were made at the end of May, conditions improved throughout the Dominion.

(Telegram of 12 June): The first telegraphic report for the whole of Canada showed that, although the usual summer variation in crop conditions was becoming apparent, cereal crop prospects, on the whole, were very satisfactory. In each section of the country drought has caused some damage, the particular areas being West-Central Saskatchewan and North-Eastern Alberta. The season was late throughout most of the Dominion with greater rainfall in the Prairie Provinces.

There is more uniformity and balance in the agricultural situation than has been evident for some years. With warmer weather and timely rains harvests of average size may still be garnered.

(Telegram of 19 June). The heavy and well distributed rains that fell over the Prairie Provinces during the week caused a decided improvement in crop prospects. One of the dry areas, extending over West Central Saskatchewan and East Central Alberta, was relieved by good rain but limited damage from drought continues in another dry area, located in South-Western Saskatchewan and South-Eastern Alberta. Evaporation remained low because of the cool weather and the lack of high winds, and the added moisture will be more effective than usual. The crops in Northern

and parts of Central Alberta were causing some concern owing to the lateness of seeding but elsewhere growth has been strong and fairly rapid. The cool wet weather continues to delay the hatching of grasshoppers.

(Telegram of 26 June): During the past week light showers fell in many parts of Western Canada while heavy rains were concentrated in relatively few districts. In general, it may be stated that the outlook continues favourable in Manitoba and Saskatchewan while the prospects in Alberta are not quite as favourable as a week ago. Rain is needed in parts of Southwestern Saskatchewan and is needed urgently in Southeastern Alberta and in local areas in Southern Alberta. Definite crop damage due to drought is reported from Southeastern Alberta. In Northern Alberta, where crops are decidedly late, further rains were received last week. Warm weather is urgently needed to stimulate growth. In the Peace River area crops are late and some points need rain.

Chile: According to the most recent estimate production of wheat this year is about 18,739,000 centals (31,232,000 bushels) against 21,185,000 (35,307,000) in 1933-1934 and 16,120,000 (26,865,000) on the average of the five years ending 1932-33 percentages 88.5 and 116.3.

United States: (Telegram of 25 May): Weather in the preceding week continued cool over most of the country, which, combined with excessive rains in the interior valleys, delayed planting. The south-western drought area was relieved and moisture become ample almost everywhere.

(Telegram of 31 May): Temperature was low and delayed the growth of the grain crops. There were frosts in the north-eastern and Lakes regions. The moisture supply was then generally sufficient except in the north-east, and in the interior of the Pacific north-west area.

(Telegram of 6 June): Warm weather in the eastern half of the country, the northern plains and the south-west favoured the crops. The soil was still too wet over much of the interior, including the Lower Ohio Valley and the east central plains, and field work was several weeks late. This caused rank growth in the small grain crops. Conditions to the west of the Rocky Mountains were satisfactory except for a small drought area.

(Telegram of 13 June): Moisture supplies were generally sufficient except in the Pacific North-West Section and the south-eastern States. Excessive moisture produced rank growth in the small grain crops but the condition of crops was much improved over last year's.

The estimates of the production of winter wheat and rye based on crop condition on 1 June are as follows:

	1935	1934	Average 1929-1933	% 1935 1934 = 100	Average = 100
Winter wheat (ooo bushels) . .	441,494	405,034	572,861	109.0	77.1
(ooo centals) . .	264,896	243,020	343,717		
Rye (ooo bushels)	44,031	16,040	35,167	274.5	125.2
(ooo centals)	24,657	8,982	19,694		

These are upward revisions of about 10 million and 3.7 million bushels (5.9 and 2.1 million centals) respectively of the estimates made a month earlier.

(Telegram of 21 June): During last week warm weather and general rains in the east of the Rocky Mountains were of benefit to the crops though the wet soil in the Lower Ohio and Central Mississippi Valleys further delayed planting. Rains are desired in some areas in the south-east and also to the west of the Rockies.

Mexico: The crop condition of wheat at the end of April was generally mediocre owing to the drought prevailing in many of the growing districts.

India: Production this year is about 220,035,000 centals (366,725,000 bushels) against 211,254,000 (352,091,000) in 1933-34 and 210,605,000 (351,008,000) on the average of the five years ending 1932-33 percentages 104.2 and 104.5.

Japan: Weather conditions during May were favourable to wheat and barley, crop conditions of which on 1 June were average.

Palestine: Areas affected with *Scythris temperatella* have somewhat recovered. Harvesting of cereal crops is in full swing. The unprecedented hot spell at the end of April and in early May has hastened them. In the central and northern districts good yields are anticipated, but in the south, more especially in Gaza and Beersheba, the failure of the crops is very marked, due to lack of rain.

Turkey: According to the most recent estimate the area cultivated to spelt this year is about 122,000 acres against 171,000 in 1934 and 221,000 on the average of the five years ending 1933; percentages 71.7 and 55.3.

Algeria: Abundant precipitation occurred at the beginning of May and in the second half of the month, considerably ameliorating the situation, particularly in the west, in the département of Oran, where severe drought had prevailed for several months and the crops seemed at the end of April to have been very much damaged. On 1 June condition of all cereals was again average and almost equal to that at the same date last year; only that of wheat was below the figure of 1 June 1934.

On the eve of the harvest the first provisional estimates of yield were established; they are much below those of last year, by about a quarter, but for all cereals except soft wheats are above the average of 1929-33.

Wheat production is expected to reach 14,176,000 centals (23,626,000 bushels) which, though 17 % below that of last year, is 7.5 % above the five-year average. Production of soft wheat, which is estimated at 5,567,000 centals (9,278,000 bushels) will be 29 % below that of last year but, thanks only to the larger area cultivated, 9 % above the average, while the area was 15 % smaller than that of last year, it exceeded the average by 22 %; the unit-yield of 5.9 centals (9.8 bushels) per acre is not only over one-fourth, 2.2 (3.7), below that of last year but quite appreciably below the five-year average of 6.7 centals (11.2 bushels) per acre; this is due to the fact that the hard wheats are grown especially in Oran and have consequently suffered particularly from the drought.

In all, wheat production, according to the provisional estimate, would appear to be 19,742,000 centals (32,903,000 bushels), 24.4 % below that of last year, which was finally estimated at 26,117,000 (43,528,000), and 7.8 % above the 1929-33 average of 18,316,000 (30,526,000). It should, however, be noted that while there is always the possibility of a loss during ripening, the provisional estimate has almost always been very appreciably raised after the harvest; this occurred last year, when the correction amounted to about 3 ½ million bushels, in 1933, 1930, 1929 and, with a smaller correction, in 1932.

Barley is expected to give a unit yield of 10.8 bushels per acre, also much below that of last year (14.3) and slightly above the five-year average (10.0). The estimated production is about 15,900,000 centals (33,070,000 bushels), that is, 26.1 % less than last year's, which was 21,482,000 (44,755,000) and, with the reduction of 11.2 % on the average area of 1929-33, it is 4.2 % below the average of 16,569,000 (34,519,000).

Production of oats this year will be about 2,756,000 centals (8,612,000 short tons) against 3,804,000 (11,889,000) in 1934 and 3,710,000 (11,594,000) on the average of the five years ending 1933; percentages 72.4 and 74.3.

Production of rye this year will be about 22,000 centals (39,400 short tons) against 25,200 (45,100) in 1934 and 22,900 (40,800) on the average of the five years ending 1933; percentages 87.4 and 96.4.

Cyrenaica: In May precipitation was scanty, especially in the maritime districts; the *ghibli* had an unfavourable effect on the cereal crops, which are now estimated to be rather poor. Condition of wheat and of barley is regarded as mediocre.

Egypt: Barley harvesting was everywhere completed at the beginning of May. The unit-yield was 14 % above the five-year average. Harvesting of wheat was finished in Upper Egypt toward the end of May and in the rest of the country toward the middle of June. Despite the losses due to abnormal heat at the end of April and beginning of May a unit-yield 7 % above the five-year average and 14 % above that of last year is expected.

Kenya: It was reported in April that the main cereal areas enjoyed fair rains in the early part of the month and it was expected that, provided the weather continued favourable, crops generally would do well.

French Morocco: Rains, frequently of a stormy character, fell in May, especially at the beginning of the third decade; they were very unequally distributed but heavier in the northern half of the country. The west and southwest winds that brought them prevented any great rise in temperature, which would have been very prejudicial in view of the lack of soil moisture.

The rains were too late to have much effect on winter cereals, of which some, particularly soft wheats and barleys, had already ripened; they did, however, somewhat improve the yield the later hard wheats. On the other hand their violence and the occurrence of hailstorms checked the harvest in several places and injured soft wheat; a frost seriously affected soft wheat in one locality in the east.

On the whole the position of the winter wheat crop improved during May but only to a small extent. Harvesting of barley came to an end at the end of May in the Chaouia (littoral); it had began, with that of early soft wheats, and was in places fairly well advanced in other places; in the Chaouia the ears were short and the grain in rather many cases wrinkled and constricted. Save for a few exceptional crops, particularly on European farms, the winter cereal crop is expected to be still mediocre.

Tanganyika: Weather conditions were favourable in April, and the cereal crop was expected to give excellent yields.

Tunisia: The temperature in May was below normal in the first half of the month and normal in the second half. Precipitation was small save in the extreme north where hailstorms of short duration occurred; in the centre and south there was practically no rain. A fairly strong northwest wind prevailed throughout practically the

entire month save at the close, when the scirocco made itself felt. The effect of these conditions on the crops varied greatly.

At the end of May harvesting had begun in all districts, for early soft wheats in Bizerta, for barleys in all districts and in the south for wheats also. Yields of barley are generally satisfactory and even very good in the Bizerta area, where there were fears of blasting not only for early soft wheats being harvested but for hard wheat just ripening, though for the latter it was expected that, apart from accidents, the yields would be good in the native crops; in the other districts it was considered that wheat yields would be below average and at times even rather poor owing to the drought.

This information confirms the opinions so far held: that the barley crops would be good, that of hard wheat average or even slightly below average and that of soft wheat rather poor.

Union of South Africa: Winter crops, especially wheat, were being sown in April on a large scale and provided conditions remained favourable, a record area was expected to be planted.

WORLD MAIZE PRODUCTION AND TRADE

I. — *General considerations.* — With the publication of the official estimate of maize production in Argentina, there is now available sufficient statistical material to enable the main features of the world production of the cereal in 1934/35 to be delineated. In fact, though estimates are still missing for some important producing countries, including Portugal, the U. S. S. R. (for which production but not area is known), India and Manchuria in the northern hemisphere and the Netherlands East Indies and Brazil in the southern hemisphere, the area and production of the countries that have published official data amount to about four-fifths of the world total.

II. — *Area under maize.* — At the time of sowing in the northern hemisphere — March to May 1934 — very low prices were current on the world market, amounting to no more than one-third of those at the corresponding date of 1929 and equivalent to the level reached in September-October 1933, the lowest of recent years. Growers were not therefore encouraged to increase the area under the crop.

Area of maize in Europe.

Groups of countries	1934			1933	Average 1928-32
	Absolute data	%		Absolute data	Absolute data
		1933 = 100	Average = 100		
	1,000 acres			1,000 acres	1,000 acres
Producing-exporting (countries 4)	23,381	102.5	107.7	22,813	21,713
Producing-importing (countries 8)	6,832	101.4	100.9	6,786	6,820
Total (12 countries)	30,263	102.2	106.1	29,599	28,533

Nevertheless, the twelve European countries for which data are available showed a slight increase in maize area in 1934 with respect to both 1933 and the average. Of the two groups in the table, that of the four Danubian countries (Romania, Yugoslavia, Hungary and Bulgaria) has the largest increase in area while the group of producer-importers (Italy, France, Spain, Czechoslovakia, etc.) practically maintains the average of 1928-32. In addition to reasons of agricultural technique regarding rotations, in the group of exporters, the area under maize is also affected by psychological factors, such as the preference of the peasants for this crop (especially in Romania and Yugoslavia) owing to the multiplicity of the uses to which it and its byproducts can be put. Maize is the surest food reserve for both family and stock as well as the best financial reserve. Amongst the producer-importers the extension is due to the tendency of these countries to make themselves as far as possible independent of the world market for meat and fats by increasing the number of their livestock, which requires an increase in their fodder crops, amongst which maize occupies a very important place. In this respect the intensive campaign of the German Government for the increase of maize production both for green fodder and ensilage and for grain merits special mention.

In North America the Government of the United States has energetically conducted the policy of maintaining maize prices by reducing the area of the crop and the numbers of pigs so that the area of maize in 1934 showed a reduction of 15.3 % with respect to 1933 and one of 14.9 % with respect to the 1928-32 average. Given the further reduction in Mexico, the three North American producers—the United States, Canada and Mexico—together show a decline of 14.7 % and of 14.2 % with respect to 1933 and the average.

Trend of the maize area in the principal countries for which data are available.

Countries and groups of countries	World importance of groups considered, taking world area for 1925/26-1929/30 as 100	1934 (1934/35)			1933 (1933/34) — Absolute data	Average 1928-32 (1928/29-1932/33) — Absolute data
		Absolute data	%			
			1933 (1933/34) = 100	Average = 100		
	%	1,000 acres			1,000 acres	1,000 acres
Europe (12 countries)	13.9	30,263	102.2	106.1	29,599	28,534
United States, Canada and Mexico . .	55.0	94,949	85.3	85.8	111,300	110,660
Turkey, Cambodia, Chosen, Syria and Lebanon	0.6	1,873	118.4	142.5	1,581	1,315
Egypt, French Morocco, Kenya 1), Tunisia, Algeria and Eritrea . .	1.5	2,832	104.1	93.4	2,721	3,032
Argentina 2)	4.8	17,372	107.9	126.7	16,097	13,715
Union of South Africa 1)	2.6	6,672	102.9	114.1	6,506	5,847
TOTAL	78.4	153,961	91.8	94.4	167,804	163,103

1) Europeans only. — 2) Area sown. — 3) Calculated.

The Asiatic group, for which data are available, shows a marked increase, almost entirely due to Cambodia, since Turkey, the leading producer of the group, has appreciably diminished the area under maize, in connection with its policy of developing the two other leading crops of the country, wheat and barley. The North African group shows a recovery from the fall that occurred in 1933, due principally to the reduction of the maize area in Egypt. The notable and progressive increase in French Morocco deserves special mention.

As regards the southern hemisphere the most important event was the increase in the maize area of Argentina, of which the area sown in September-October 1934 was 7.9 % larger than that in 1933 and 26.7 % above the five-year average. At the time of sowing the great fall in the crops of maize and other fodder cereals in the United States was already known. There was already an impression that the reduction in numbers of livestock in that country, though notable, would not reach the point of rendering unnecessary the import of fodder from abroad and principally from Argentina. It will also be remembered that for the entire period of Argentine sowings in 1934 the world price remained somewhat higher than in the corresponding period of 1933. If account is also taken of the almost complete predominance of Argentina on the world market, where

Area of maize in Argentina and the Union of South Africa.

Season	Argentina			Union of South Africa Area harvested (Europeans only)
	Area sown	Area harvested		
		Absolute data	% (sown = 100)	
	1,000 acres	1,000 acres		1,000 acres
1934/35	17,372	...	...	1) 6,672
1933/34	16,097	9,798	60.9	6,506
1932/33	14,540	9,301	64.0	6,074
Average 1927/28-1931/32	12,954	9,804	75.7	5,500
1931/32	14,468	9,519	65.8	6,027
1930/31	13,776	11,577	84.0	5,370
1929/30	13,954	10,423	74.7	6,398
1928/29	11,832	8,693	73.5	5,370
1927/28	10,739	8,802	82.0	4,737

1) Approximate.

the competition of the Danubian countries, the U. S. S. R. and the Union of South Africa in the two preceding seasons was greatly reduced, the principal causes of the great increase that has led to such anxiety not only in the trade but also on the part of the Argentine Government, which had guaranteed the growers a minimum price of 4.40 pesos a quintal, are apparent. At the beginning of 1935 the National Bank of Argentina commenced to encourage the small owners to rear pigs and later to facilitate credits so as to discourage a too intense movement toward the ports at the beginning of the commercial season.

At present an estimate of the maize area destroyed is lacking; on the average it is almost 25 % of the area sown. On the basis of the weather and of the off-

cial data of production it may be assumed that the area destroyed will be considerably below the average.

The second important producing exporting country of the southern hemisphere, the Union of South Africa, where the area under maize has steadily increased in the last three seasons, has so far not published an official estimate of area.

III. — *Unit-yields and weather.* — The course of the weather is reflected in the unit-yields given in the following table. The European countries show a yield higher than both that of 1933 and the average, due particularly to the three large producers: Yugoslavia, Italy and Hungary. The beginning of the season was characterized in the Danubian countries by exceptional drought, which hindered and protracted sowing. The season improved rapidly in June and July, even a record outturn being obtained in Yugoslavia and a good one in Hungary but in Romania part of the maize did not completely ripen. A real catastrophe was the drought in the United States, where production was reduced by 46.1 % on the 1928-32 average, over 30 % owing to the low unit-yields. The total of the Asiatic groups shows a heavy fall in unit-yields, due principally to Turkey. The weather was favourable in North Africa and exceptionally so in Argentina. The latter country was also favoured this year by very favourable weather at the time of harvest and conditioning for overseas export so that arrivals in Europe are of excellent quality. The same cannot be said of the Union of South Africa, where the drought was intense toward the middle of March and, sowings having been late,

Unit-yields of maize.

(bushels per acre)

Countries and groups of countries	1934 (1934/35)	1933 (1933/34)	Average 1928-1932 (1928/29- 1932/33)
Europe (12 countries)	23.6	20.2	21.2
United States, Canada and Mexico	15.3	21.8	23.9
Turkey, Cambodia, Chosen, Syria and Lebanon	18.2	21.2	19.6
Egypt, French Morocco, Kenya 1), Tunisia, Algeria and Eritrea	26.8	24.7	28.2
Argentina 2)	26.1	15.9	22.1
Union of South Africa 1)	3) 8.9	11.2	8.0
<i>Total . . .</i>	<i>18.2</i>	<i>20.2</i>	<i>22.5</i>

1) Crops of Europeans only. — 2) Unit-yields calculated from area sown. — 3) Unit-yields calculated from approximate area.

some damage was caused by frosts. For the group of 27 countries considered the yield is very low, given the great relative importance of the United States in world production (of the total world area of maize in 1925/29 that in the United States was 51 %).

IV. — *World production of maize.* — All the groups considered have a production larger than that in 1933/34, save the United States and the Union of South Africa, of which the reductions not only cancel the increases of the others but diminish the total for the group of 27 countries. With respect to the five-year average, the United States and the North African group have a lower outturn, in the latter due particularly to the heavy reduction in Egypt. The crop in the Union of South Africa is above the average, thanks only to the fact that the average covers the exceptionally small production of 1933.

*Trend maize production
in the principal countries for which data are available.*

Countries and groups of countries	World importance of groups considered, taking world production for 1923/26-1929/30 as 100	1934 (1934/35)			1933 (1933/34) — Absolute data	Average 1928-32 (1928/29-1932/33) — Absolute data
		Absolute data	%			
			(1933/34) = 100	Average = 100		
	%	1,000 bush.			1,000 bush.	1,000 bush.
Europe (12 countries)	12.4	713,527	119.2	118.4	598,413	602,433
United States, Canada and Mexico.	61.1	1,454,493	59.8	55.1	2,432,454	2,639,386
Turkey, Cambodia, Chosen, Syria and Lebanon	0.5	33,904	101.0	131.3	33,566	25,818
Egypt, French Morocco, Kenya (1), Tunisia, Algeria and Eritrea. . .	1.9	75,729	112.8	88.6	67,108	85,504
Argentina	6.6	452,738	176.2	148.9	256,919	303,960
Union of South Africa	1.4 2)	67,777	79.4	112.3	85,363	60,328
TOTAL . . .	83.9	2,798,168	80.6	75.3	3,473,823	3,717,429

1) Crops of Europeans only. — 2) Second estimate.

On the basis of the data for the countries mentioned, world production for 1934/35 may be calculated at about 20 % less than the preceding crop and 25 % less than the five-year average. The data for the countries not included and the further modifications for Argentina and the Union of South Africa cannot substantially modify these percentages.

It is worthwhile remembering that the Argentina estimate may be changed materially as was the case last year when it was raised from 130.1 million centals (232.3 million bushels) to 143.9 (256.9) (March 1935). The same applies to the estimate of South Africa.

The increase in production of the European group is due almost wholly to the higher unit-yields. Of the countries that do not appear in these tables it is known that in the U. S. S. R. production in 1934 was 84.7 million centals (151.2 million bushels) against 105.8 (189.0) in 1933 and the average of 75.7 (135.1).

On the basis of the following table the Argentine crop of this year may be compared with those of the preceding years and will be seen to be considerably above the record of 1931. No other country, except the United States, has exceeded 220

Production of maize in Argentina and the Union of South Africa.

(in thousands of bushels).

Season	Argentina	Union of South Africa		
		Europeans	Natives	Total
1934/35	452,738	1) 59,482	1) 8,295	1) 67,777
1933/34	256,919	72,533	12,830	85,363
1932/33	267,765	21,357	8,432	29,789
Average 1927/28-1931/32	312,728	52,991	15,084	68,075
1931/32	299,334	54,714	13,263	67,977
1930/31	419,668	45,195	11,976	57,171
1929/30	280,623	61,647	18,302	79,949
1928/29	252,411	49,557	17,196	66,753
1927/28	311,602	53,840	14,681	68,521

1) Second estimate; the fourth estimate of total production is 64,543,000 bushels.

million centals (394 million bushels) as has Argentina in 1931 and 1935, so that that country retains incontestably the second place in the world production of maize. The crop in the Union of South Africa (second estimate) remains above the average of the five years ending 1931/32 (not including the exceptionally low year of 1932/33), showing a greater expansion for the crops of Europeans.

V. - *The World Maize Trade.* — As Argentina is the greatest exporter of maize in the world, its exceptionally large outturn of this year must be brought into relation with the normal movement on the world market. In the following table, which shows how the world trade in maize is divided up between the ten chief exporting countries, the dominating position of Argentina is conspicuous.

Export of maize by Danubian commercial seasons: November-October.

(millions of bushels)

Countries	1925/26	1926/27	1927/28	1928/29	1929/30	Average 1925/26 to 1929/30	1930/31	1931/32	1932/33	1933/34
1. Argentina	169.7	323.6	268.9	203.1	172.0	227.5	354.7	314.9	186.0	228.2
2. Romania	24.4	68.9	28.0	3.9	50.8	35.2	33.5	61.4	61.0	18.1
3. Yugoslavia	36.2	12.6	0.0	1.6	21.3	14.3	11.4	3.1	25.6	21.1
4. Hungary	7.9	2.0	2.0	1.2	5.9	3.8	0.4	0.0	7.9	1.9
5. Bulgaria	4.3	5.1	2.0	2.4	7.1	4.2	6.3	5.1	5.9	4.6
Total four Danubian countries	72.8	88.6	32.0	9.1	85.1	57.5	51.6	69.6	100.4	45.7
6. U. S. S. R.	9.1	5.9	0.8	0.0	1.6	3.5	2.4	11.0	8.5	6.0
7. United States	23.6	15.4	19.7	40.5	7.9	21.4	2.4	5.5	6.7	4.3
8. Union of S. Africa	15.7	6.3	20.5	13.8	22.0	15.7	5.9	9.1	6.3	6.6
9. Java and Madura	2.0	1.6	5.9	5.1	3.1	3.5	4.3	4.3	2.8	1.7
10. Indo-China	2.0	2.8	5.1	4.7	4.3	3.8	4.7	6.3	11.4	15.1
TOTAL TEN COUNTRIES	294.9	444.2	352.9	276.3	296.0	332.9	426.0	420.7	322.1	307.6

In each of the nine years considered, the share of Argentina in the total exports of these ten countries (which account for practically all world exports) amounts to more than a half, sometimes reaching 88 %. The exports from Argentina were highest in the year 1 November 1930 to 31 October 1931, out of the large harvest of 157.2 million centals (281 million bushels) in 1930 and the record crop of 235.0 million centals (420 million bushels) of 1931. Large quantities were also exported from Argentina in the years 1926/27 and 1931/32. The second source of exports is formed by the group of four Danube countries, among which Romania occupies first place. The largest contribution of this group, relatively and absolutely, was made in the years 1926/27 and 1932/33 following the abundant harvests in these countries. The United States also appears as an exporter in the first five seasons, with considerable shipments, which, during the year of great drought in the Danube basin, 1928/29, reached 22.7 million centals (40.5 million bushels). During the last four years the relative and absolute importance of North American shipments has declined. Among the smaller exporters, the steady growth of Indo-China, which finds a special output on the French market, is worthy of note.

Last year, 1933/34, which closed on 31 October 1934, showed a further reduction compared with 1932/33, partly resulting from the restrictive policies of the importing countries and from the low level of prices.

Exports in the first six months of the present Danubian season are as follows in million bushels:

	Nov.-Jan. Quarter	Feb.-April Quarter	Total 6 months Nov. 1934- April 1935
1. - Argentina	49.4	39.9	89.3
2. - Romania	6.3	2.8	9.1
3. - Yugoslavia	9.9	5.1	15.0
4. - Hungary	0.1	0.1	0.2
5. - Bulgaria	0.7	0.0	0.7
<i>Total of four Danubian countries . . .</i>	<i>17.0</i>	<i>8.0</i>	<i>25.0</i>
6. - U. S. S. R.	0.0	0.0	0.0
7. - United States	0.3	0.1	0.4
8. - Union of South Africa	4.1	4.7	8.8
9. - Netherlands Indies 1)	0.4	1.6	2.0
10. - Indo-China	7.3	2) 0.6	7.9
TOTAL . . .	78.5	54.9	133.4

1) Java and Madura. — 2) 2 months only.

Exports were very low in the first six months of the year. The Hungarian contribution, notwithstanding the comparatively plentiful output of 1934, is absent completely, while that of Bulgaria was reduced to very small dimensions owing to the export prohibitions which ruled during part of the period under consideration. This year the first place among the Danube countries is taken by Yugoslavia, which had a record crop in 1934, while Romania made a more modest contribution. The export possibilities of the Danube countries are disas-

pointing all round. In Yugoslavia there are considerable quantities available and, to a less extent, in Romania but supplies are not forthcoming to the extent expected. Internal prices are above world prices and make exports impossible. If the possibility of statistical errors large enough to account for the absence of supplies is excluded, it is probable that domestic consumption has increased. Certainly in Romania, where wheat enjoys government protection guaranteeing a minimum price, the greater consumption of maize on the part of the peasant is a natural consequence. The peasant is also forced towards this cheaper product (compared with wheat) by the reduced purchasing-power resulting from the rise in the prices of industrial products, the outcome of import restrictions. The Hungarian Government, to prevent the excessively high prices that are caused by the lack of supply from first sources and that are threatening the important stock-raising industry, has allowed considerable quantities of maize to be imported from the neighbouring Danube countries. Hungarian statistics for April show imports of more than 88,000 centals (157,000 bushels) and these will probably be followed by further quantities.

If prices do not increase in the following months, Danubian exports will remain modest in amount until the new crop is definitely assured. Argentina will thus completely dominate the world market until the new Danubian harvest.

Argentine production and export of maize in the last ten years.

(1,000 bushels)

Year of harvest	Commercial year (May-April)	Production	Export					
			in the first quarter after the harvest (May- July)	in the second quarter after the harvest (August- October)	in the third quarter after the harvest (November- January)	in the fourth quarter after the harvest (February- April)	in the twelve months after the harvest	
							absolute data	% (produc- tion = 100
1935	1935-36	452,738						
1934	1934-35	256,919	64,387	57,348	49,423	39,872	211,030	82.1
1933	1933-34	267,765	54,868	54,529	68,722	37,731	215,850	80.6
1932	1932-33	299,334	90,776	63,734	45,785	30,806	231,101	77.2
1931	1931-32	419,668	112,621	120,692	89,099	71,229	393,641	93.8
1930	1930-31	280,623	37,998	61,986	64,013	57,580	221,577	79.0
Average 1925-29	Average 1925-26 to 1929-30 . . .	278,560	71,820	67,253	51,691	32,550	223,314	80.2

In order to assess more exactly the position in Argentina the above table has been prepared showing production compared with exports in the 12 months following. On an average about 80 % of the outturn in Argentina is exported, only 20 % remaining in the country. The present year closely resembles 1931/32, when 220.5 million centals (393.6 million bushels) were exported. The Government of Argentina stated on 17 June that exportable supplies amounted to 184.7 million centals (329.9 million bushels), an amount which, in normal conditions, can be easily placed, especially since the United States,

instead of exporting as it did in the last few years, is importing very substantial quantities. Imports of maize into the United States began to exceed exports in October 1934 and increased continuously till they reached a maximum of 1.8 million centals (3.3 million bushels) in March 1935. Imports of barley and oats into this country are also high. As visible fodder stocks in the United States are diminishing rapidly and as the maize harvest will be later than usual owing to the delay in sowing, it is permissible to anticipate that further amounts of maize will be imported in the coming months into that country.

In the quarterly distribution of Argentine shipments, on the average, it is in the first quarter, May-July, that exports are proportionately greatest, the second quarter, August-October, coming next. Record exports from Argentina, which were made between 1 May 1931 and 30 April 1932, were distributed over the four quarters as follows: 28.6 % in the first quarter, 30.7 % in the second, 22.6 % in the third and 18.1 % in the fourth.

Turning to the importing countries, the decline in imports that was seen in the preceding year continued during the year 1933/34, the total falling from

Net import of maize by Danubian commercial seasons: November-October.

(Millions of bushels).

Countries and groups of countries	1925/26	1926/27	1927/28	1928/29	1929/30	Ave- rage 1925/26 to 1929/30	1930/31	1931/32	1932/33	1933/34
I. — COUNTRIES IMPORTING BUT NOT PRODUCING MAIZE.										
1 Great Britain and Northern Ireland	63.0	77.2	67.7	64.2	61.0	66.6	90.9	108.7	101.2	115.2
2 Netherlands	37.4	53.5	49.2	39.4	40.2	43.9	57.5	65.4	56.3	39.3
3 Germany	22.0	78.7	56.7	26.0	29.5	42.6	17.7	30.3	11.8	13.3
4 Belgo-Luxembourg Union	22.8	30.7	24.0	20.9	22.8	24.2	28.7	31.1	29.1	28.6
5 Denmark	14.6	31.1	28.7	6.7	11.0	18.4	24.0	37.8	24.4	8.2
6 Irish Free State	13.0	15.0	15.0	14.2	14.2	14.3	21.7	24.4	12.6	11.7
7 Norway	4.3	5.5	5.1	3.1	4.7	4.5	7.1	7.5	6.3	5.5
8 Sweden	3.9	6.3	8.7	3.1	3.9	5.2	13.0	11.0	9.8	5.5
<i>Total I group</i>	<i>181.0</i>	<i>298.0</i>	<i>255.1</i>	<i>177.6</i>	<i>187.3</i>	<i>219.7</i>	<i>260.6</i>	<i>316.2</i>	<i>251.5</i>	<i>227.3</i>
II. — COUNTRIES IMPORTING AND PRODUCING MAIZE.										
9 Italy	19.7	14.6	29.1	36.2	27.2	25.4	31.1	28.0	0.8	6.9
10 France	23.2	30.7	24.4	32.7	31.1	28.4	42.5	46.1	30.7	24.4
11 Spain	15.0	11.8	12.6	11.8	6.7	11.6	6.7	11.8	3.5	3.4
12 Czechoslovakia	13.0	15.7	12.2	9.1	9.8	12.0	23.6	17.7	5.9	9.2
13 Portugal	1.6	3.1	2.8	2.0	2.8	2.5	2.8	2.4	2.8	3.0
14 Greece	0.8	1.2	1.2	1.2	0.4	1.0	0.8	5.9	1.2	0.1
15 Austria	6.7	7.9	6.3	4.3	7.9	6.6	11.0	13.8	20.5	18.7
16 Poland	0.8	5.1	2.8	0.8	0.8	2.1	0.8	0.4	0.0	0.1
17 Switzerland	5.5	5.9	5.1	4.7	4.7	5.2	6.3	6.7	3.5	3.2
18 Canada	10.6	16.5	14.2	14.6	13.4	13.9	8.7	7.1	7.9	7.3
19 Japan	0.8	1.2	1.2	1.6	2.8	1.5	3.1	3.1	0.0	.0
<i>Total II group</i>	<i>97.7</i>	<i>113.7</i>	<i>111.9</i>	<i>119.0</i>	<i>107.6</i>	<i>110.2</i>	<i>137.4</i>	<i>143.0</i>	<i>76.8</i>	<i>76.3</i>
GENERAL TOTAL	278.7	411.7	367.0	296.6	294.9	329.9	398.0	459.2	328.3	303.6

183.8 million centals (328.3 million bushels) to 170.0 million centals (303.6 million bushels). It is worth noting that, notwithstanding the decrease in total imports, the imports of the producing-importing group of countries were maintained practically at the level of the preceding year, while Great Britain and Northern Ireland show the highest imports in the 9 years considered. It is interesting to observe that imports of the Belgo-Luxembourg Union were maintained practically at the figure of the preceding year while Germany and Italy show an increase in their imports, which touched a record low level during 1932/33.

In the first six months of the year 1 November 1934 – 31 October 1935, total imports of the 19 countries considered show only a slight decrease from those of last year. While in the last two years and during the first half of the present year, purchases by Japan were almost nil, there are indications that this country is beginning to take large quantities from the Argentine market. Argentine statistics for recent months show that substantial quantities of maize are being sent to non-European countries, chief among them being the United States, Canada and Japan.

The quarterly distribution of net maize imports in the last 10 years is shown in the following table.

Net import of maize into the nineteen leading importing countries. 1)
(millions of bushels)

Commercial season	Danubian season (November-October)							
	Argentine season (May-April)					May- July quarter	August- October quarter	Total Danubian season November- October
	May- July quarter	August- October quarter	November- January quarter	February- April quarter	Total Argentine season May-April			
1934/35	71.1	83.7	80.5	57.7	293.0	...	...	...
1933/34	77.9	77.9	76.1	72.6	304.5	71.7	83.8	303.6
1932/33	114.6	104.7	99.4	72.9	391.6	78.0	78.0	328.3
1931/32	93.7	135.4	138.2	101.6	468.9	114.6	104.8	459.2
1930/31	62.6	82.3	93.0	75.7	313.6	93.8	135.5	398.0
Average 1925/26 to 1929/30	71.6	88.5	89.6	74.1	323.8	74.8	91.4	329.9
1929/30	62.6	82.3	84.0	65.8	294.7	62.7	82.4	294.9
1928/29	72.8	108.7	89.5	62.0	333.0	62.7	82.4	296.6
1927/28	107.9	116.5	104.7	80.7	409.8	72.9	108.7	367.0
1926/27	66.9	66.9	89.3	98.3	321.4	107.7	116.4	411.7
1925/26	48.0	68.1	80.4	64.3	260.8	67.0	67.0	278.7

1) For names of countries see preceding table.

It will be seen that in the year May 1934 – April 1935 imports were comparatively low and near the level of the year 1929/30, but only 6.4 million centals (11.5 million bushels) below those of the year 1933/34.

The year resembling most closely that which opened on 1 May of this year is 1931/32 in which the 19 countries considered imported a total of 262.6 million centals (468.9 million bushels).

In view of the substantial amounts taken by the United States, the low prices of maize compared with other fodder and the possibility of a poor hay production in the maize importing countries of Europe give grounds for supposing that the importing countries as a whole will be able to absorb the large stocks available in Argentina as well as the smaller amounts in the other exporting countries without difficulty.

V. DESMIREANU.

MAIZE

Austria: In the valleys maize generally germinated after the frosts of May but its development was slow, owing to cold weather. The land under maize had to be cultivated again in most cases, where germination had occurred before the frosts.

Bulgaria: In the first half of May the weather was rather cold and frosts occurred. The second half was warmer and less rainy. Weather in general favoured the sowings but the storms at the end of the month caused losses. The area cultivated is 1,673,000 acres, against 1,658,000 in 1934 and 1,796,000 on the average of 1929-33; percentages 100.9 and 93.1.

France: According to the estimate on 1 June the area cultivated to maize this year is about 786,000 acres against 846,000 in 1934 and 808,000 on the average of the five years ending 1933; percentages 92.9 and 97.3. Crop condition on 1 June 1935 was 65 according to the French system, against 68 on 1 June 1934 and 67.4 on average of the ten years ending 1933.

According to the final estimate production in 1934 was about 11,241,000 centals (20,073,000 short tons) against 9,589,000 (17,123,000) in 1933 and 10,516,000 (18,778,000) on the average of the five years ending 1932; percentages 117.2 and 106.9. The area harvested was practically equivalent to the area harvested in 1933 and to the average (100.8 and 99.5 %).

Hungary: After the rains of the first half of June development was good. Late sowings germinated uniformly. Early hoeing was in progress.

Italy: The crop suffered from hoar-frost and drought. The rains in May, however, improved condition almost everywhere and there was promise of good yields.

Romania: The early-sown maize suffered a great deal from the cold weather of the beginning of May, but the late sowings had a good appearance.

Czechoslovakia: The maize crop in Slovakia is progressing well. In some areas it was still being sown at the beginning of June.

Argentina (Telegram of 22 June): The maize crop, threshing of which is now in progress, is giving very satisfactory results.

Indo-China: The harvesting of dry season maize was finished in April in Cochinchina and Cambodia. In Cambodia, the drought reduced yields, which, on the average, will only reach 12 bushels (7 centals) per acre. Despite the increase in the area, the crop will only amount this year to about two-thirds of last year's but it is larger than all former crops and exceeds the average of the preceding five years by more than 100 %. The preparation of land for the rainy season crop is progressing but the lateness of the rains is likely to result in a decrease in sowings in Cochinchina.

Maize in Tonkin began flowering but at the end of March showed the effect of drought in some areas. However, the crop in the Red River Delta appeared to be very good. It suffered a great deal from storms in the middle of April on the banks of the Red River and in the upper delta, where there was much lodging and where ripening was hindered.

The spring harvesting, which was carried out in some parts of North and Central Annam, was fairly satisfactory. In the south, on the other hand, yields were much below average as a result of the long drought. The maize crop, which was in flower at the end of April, was also suffering from drought in some central districts, where yields will be low.

Algeria: May, unlike the preceding months, was wet. Cultivation and sowings were done in excellent conditions. The growth of crops was satisfactory and their appearance at the end of the month was good. Condition on 1 June was 120 in the system of the Institute and 70 in that of the country, while a year ago it was 100 and 50 respectively.

The area cultivated is again smaller.

According to the first estimate the area cultivated this year is about 17,300 acres against 19,000 in 1934 and 23,200 on the average of the five years ending 1933; percentages 91.1 and 74.5.

French Morocco: There were rains in May, unevenly distributed but fairly plentiful on the whole and of great benefit to the maize and sorghum crops as well as to all spring crops which were suffering acutely from the lack of moisture. Good yields, particularly on native holdings, and a much bigger crop than the area cultivated would indicate are expected. To the south of the coastal area maize was flowering at the end of May while sowings were in progress in the centre of Morocco.

Tunisia: In the north (Bizerta) the sowings of maize and sorghum, which cover a large area, were in good condition at the end of May.

Union of South Africa: Soaking rains fell towards the end of April practically throughout the Cape, Natal, Orange Free State, and western highveld areas of the Transvaal. Scattered showers also occurred in most of the other districts, followed by a cold spell and frost in the highveld areas, which caused a fair amount of damage to late-planted maize. It was doubtful whether some of the late-planted maize would reach maturity, and stalkborers, which have caused a considerable amount of damage this season, were still very active in some areas.

RICE

Bulgaria: Weather in May was generally favourable to sowings. Very low temperatures early in the month and storms toward the end hindered normal development, however. The most recent estimate of area is 20,000 acres against 14,600 in 1934 and the 1929-33 average of 18,200 acres; 135.5 % and 108.6 %.

Italy: The weather has on the whole been rather unfavourable and growth is considerably behind owing to the prolongation of cold weather.

Taiwan: Consequent on cryptogamic disease, slight damage is reported to rice of the first crop. Growing conditions are average.

India: In the second week of June preparatory tillage for winter padi sowings was begun in Bengal in favourable conditions, rainfall being light to moderate; more rain was needed in parts of western and northern Bengal for the sowing of the autumn crop.

Preparation for the autumn and winter crops was also going on in Bihar and Orissa in the last decade of May and first decade of June. There was light rain in a number of districts but moisture was still needed in parts of Bhagalpur, Singhbhum and Cuttack. *Dalua* padi was being harvested.

Preparations were also going on in the Central Provinces, where the weather was hot and occasionally cloudy. In Assam conditions were seasonable.

In Madras there were showers in the South in the week ending 25 May and on the west coast and in parts of the Deccan in the week ending 8 June. Sowing was going on in parts of the west coast area.

Indo-China: According to the most recent estimate area cultivated to rice of the second semester in Annam during the season 1934-35 was 1,357,000 acres against 1,421,000 in 1933-34 and 1,465,000 on the average of the five years ending 1932-33, percentages 95.5 and 92.6. The corresponding production is estimated at about 12,756,000 centals (28,346,000 short tons) against 13,316,000 (29,590,000) and 12,079,000 (26,841,000); percentages 95.8 and 105.6.

Total area cultivated in Annam in 1934-35 was about 2,302,000 acres against 2,369,000 in 1933-34 and 2,486,000 on the average of the five years ending 1932-33 percentages 97.2 and 92.6. The corresponding production is estimated at about 20,296,000 centals (45,101,000 short tons) against 21,914,000 (48,697,000) and 19,514,000 (43,363,000) percentages 92.6 and 104.0.

Area cultivated in Laos in 1934-35 was about 1,021,000 acres against 1,139,000 in 1933-34 and 1,128,000 on the average of the five years ending 1932-33; percentages 89.6 and 90.5. The corresponding production is estimated at about 7,187,000 centals (15,971,000 short tons) against 7,981,000 (17,735,000) and 7,408,000 (16,461,000); percentages 90.1 and 97.0.

The area cultivated in Cochin-China in 1934-35 is now estimated at about 5,098,000 acres against 4,943,000 in 1933-34 and 5,175,000 on the average of the five years ending 1932-33; percentages 103.1 and 98.5.

According to the most recent estimate the area cultivated in Annam to paddy of first semester for 1935-36 is about 961,000 acres against 945,000 in 1934-35 and 1,000,000 on the average of the five years ending 1933-34; percentages 101.7 and 96.1.

Harvesting of the last rice of 1934-35 was completed in Cochin-China and Cambodia in April; dry-season crops yielded 900-1000 lb. rough rice per acre.

Growth of first-crop rice proceeded generally in good conditions. In Tonkin at the end of March growth of fifth-month rice was satisfactory in all districts; during April violent storms caused laying and appreciable damage in some areas but no other untoward circumstance was reported and at the beginning of May earing, flowering and ripening took place normally according to variety; harvesting had already begun in some padis in the upper delta and preparations for the harvesting of tenth-month rice were proceeding.

In Annam the harvest of third-month rice gave rather deficitary results in some parts of the centre owing to drought and the same applied in the south for late rice though in this area early rice gave satisfactory results. Condition of fifth-month rice was satisfactory at the end of April in the north and centre, where the rains that fell during the month were favourable; flowering took place in good conditions. Sowings

of eighth-month rice in nurseries were made in April in good conditions; at the end of April appearance was good in the north.

In Cochín-China preparation of the padis for the 1935-36 season, and in places sowings of early and three-month rice, were carried out in normal conditions.

British Malaya: The weather in April was on the whole normal for the month. On the western side of the Peninsula it was at first hot and dry but later showery and cooler with an average rainfall. In some parts of Perak, Pahang, Negri Sembilan and Selangor precipitation was, however, deficient. On the east coast the dry hot season commenced as usual in April; while the rainfall was unusually low in Kelantan, it was somewhat above average on the coast of Pahang.

The harvest was practically completed everywhere except in the Larut district of Perak, where rainfall in April was well above average, and in the large new areas in Lower Perak and Kuala Selangor, in which it was expected to begin in May. In Kedah the first estimate is higher than was expected after the extensive flood damage in some areas earlier in the season, being relatively little below the record crop of 1933-34, a result attributed to high yields in the unharmed Kota Star District. In Province Wellesley South a good yield was obtained so that the whole crop in the Province and Penang Island was good. In Kelantan the wet padi harvest was fairly good.

The work of the new season is in all stages of progress up to transplanting in the inland Districts of Selangor, most parts of Negri Sembilan, the Lipis, Temerloh and Pekan Districts of Pahang and parts of Johore. In the Muar District of Johore more attention is being given to the crop.

Egypt: The sowing of early summer rice crops (*sefi*) was finished in May. Germination and growth are satisfactory. Weeding began in some fields. The irrigation situation is satisfactory.

POTATOES

Germany: The cold and dry weather which prevailed during the greater part of May was unfavourable for potatoes and crop condition on 1 June was not as good as it was at the same time last year. If, however, the present fine weather continues, the delay in growth may be made up quickly.

Austria: Owing to the cold weather germination was very slow. The leaves of early varieties were damaged by frost.

Belgium: A good proportion of the early crop was frosted during the abnormal weather of May.

Bulgaria: In May the potato crop developed, on the whole, in good conditions, despite the cold of the first days and the bad weather of the end of the month.

France: Abnormally cold weather, dry at first and subsequently too wet, prevailed in May and during the first decade of June, and very severe frosts occurred, seriously affecting the germination and sprouting of potatoes, which, in addition, are oppressed by weeds in some areas. In some of the south central *départements* such as Aveyron, there is a spreading of doryphoria. Crop condition of potatoes on 10 June was not

very satisfactory, but the weather appears to be improving and temperature is becoming more normal for the season and the damage caused by the earlier bad weather may be remedied.

In Brittany, early potatoes often gave poor yields. They have also suffered in the Rhône Valley from cold, frost and excessive moisture.

According to the estimate of 1 June, the area cultivated to potatoes this year is about 3,472,000 acres against 3,449,000 in 1934 and 3,505,000 on the average of the five years ending 1933; percentages 100.7 and 99.1. Crop condition on 1 June 1935 was 63, according to the French system, against 68 on 1 June 1934 and 66 on average of the ten years ending 1933.

Potatoes.

COUNTRIES	AREA					CROP CONDITION (†)								
	1935	1934	Average 1929 to 1933	% 1935										
				1934	Aver.									
				= 100	= 100	1-VI-1935			1-V-1935			1-VI-1934		
1,000 acres					a)	b)	c)	a)	b)	c)	a)	b)	c)	
Germany. . . . s)	358	585	599	61.1	59.7	—	—	3.1	—	—	—	2.9	—	—
Austria †)	...	6,598	6,434	...	...	—	3.0	—	—	—	—	2.8	—	—
Bulgaria	39	506	484	...	...	2.4	—	—	—	—	—	2.4	—	—
France	3,472	3,449	3,505	100.7	99.1	63	—	—	—	—	—	176	—	—
Luxemburg . . .	41	41	41	100.1	98.9	2.5	—	—	—	—	—	68	—	—
Netherlands. . .	346	356	414	97.3	83.7	—	—	1) 62	—	—	—	2.4	—	—
Poland . . . . .	...	6,825	6,662	...	...	—	—	2.8	—	—	—	—	1) 63	2.8
Switzerland . . .	...	112	115	...	...	—	—	91	—	—	—	—	—	99
Czechoslovakia ^{s)} _{†)}	101	97	87	103.7	115.8	2.7	—	—	—	—	—	2.9	—	—
	1,760	1,753	1,701	100.4	103.4									

†) For the explanation of signs and figures indicating crop condition, see cereals tables and note on page 409.

— 1) At the middle of the month. — s) Early potatoes. — †) Late potatoes.

The final estimate of the 1934 crop gives a figure of production quite larger than the preliminary estimate. Production was, in fact, about 367,139,000 centals (611,887,000 bushels) against 326,767,000 (544,601,000) in 1933 and 326,926,000 (544,866,000) on the average of the five years ending 1932; percentages 112.4 and 112.3. The 1934 crop is the largest registered, except in 1927, when the area was very much larger, and the yield per hectare is a record one.

Great Britain and Northern Ireland: In most districts of England and Wales early potatoes suffered serious damage from the severe frosts of the middle of May, but there is considerable variation in the extent of damage and only in a few areas has the crop been ploughed up. In many parts the crop is reported to be recovering but lifting will probably be delayed some weeks and the yield appreciably reduced. The effect of frost on early varieties in Scotland was serious in most areas, all haulms that were through the ground being blackened and destroyed.

The main potato crop was planted under good conditions and was not sufficiently forward to be affected to any extent by the frost.

The area under potatoes in Scotland this year is estimated at approximately 140,000 acres, or practically the same as the area in 1934 and the average of the five years 1929 to 1933.

Hungary: The rains of the first half of June favoured growth. The crop has resisted frost well. Foliage is dense and of good colour. Hail has caused more appreciable damage only here and there.

Luxembourg: The cold weather in May slowed down normal development.

Poland: At the beginning of June crop condition was average save in the *département* of Wilno, where the crops suffered from frost at the beginning of June.

Czechoslovakia: Frost has severely damaged and in some places destroyed the early potato crop, which had sprouted. The planting of late potatoes in many regions was not finished till late in May

Palestine: Potatoes are being lifted throughout the country and are giving heavy yields, and commanding exceptionally good prices; late-sown crops, owing to the failure of the latter rains, can only be expected to give mediocre yields.

Algeria: May, unlike the preceding months, was wet. Cultivation and sowings were done in excellent conditions. The growth of crops was satisfactory and their appearance at the end of the month was good. Condition on 1 June was 120 in the system of the Institute and 70 in that of the country while a year ago it was 100 and 50 respectively.

The area cultivated is again smaller.

According to the first estimate the area cultivated to main crop potatoes this year is about 19,800 acres against 20,300 in 1934 and 25,000 on the average of the five years ending 1933; percentages 97.5 and 79.1.

Tunisia: In common with all market garden crops, potatoes suffered in the severe winter in the north (Bizerta). They were suffering from drought in the central districts at the end of May and were in good condition in the south (Susa) in spite of mildew.

SUGAR

The cold but not too wet weather which marked the first two weeks of May in many of the European countries and which was referred to in the *Crop Report* of last month, continued during part of the second half of the month. The beet crops were generally very much behindhand, particularly in Central and Northern Europe, and as the growth of the young plants was somewhat weak and irregular, they were unable to withstand attacks of disease. But after the end of May weather conditions improved, temperature rose and rains fell though not always in sufficient quantities.

In Germany as a whole, the situation of the beet crop is better than it was a month ago but it is still not better than average. Parasites have caused some damage. In Lower Silesia crop condition in the early days of June showed much variation but the growth of plants in the north was more promising. Complaints were heard of insect attacks. The crops in the south are very backward, uneven and in some places the gaps had to be filled up. In Upper Silesia, on the other hand, the beets, favoured by warm weather, are growing well but in the middle of June, both in Upper and Lower Silesia, the scarcity of rains was felt keenly. In Saxony the singling of beets proceeded regularly and vegetation assisted by

the warm weather, is satisfactory. In Thuringia also, crop condition improved as a result of the warm dry weather but the crops have not yet begun to make up for the backwardness of growth. Rains, however, were wanted in the middle of June. The beet crops in the Braunschweig district are developing very satisfactorily and transplanting was in progress in the first decade of June. Insects were reported to be present. The beet crop in Hanover is very late and the situation of the crop shows very much variation both in the condition of vegetation and in the progress made with agricultural work, but both, on the whole, are improving. The condition of beets in Pomerania is satisfactory, singling is finished and only the later sown crops show backwardness in vegetation; rains are needed generally. In Brandenburg growth and work on the crop are making good progress. In South Germany the very wet weather at first damaged the crop and impeded field work. Afterwards, the dry weather of the second week of June effected some improvement. In the Rhineland also weather was stormy in the first days of June, hail sometimes making field work impossible, but with an improvement in temperature and weather, growth of beets went on satisfactorily.

The condition of the beet crops in Austria is good, though growth is late, and work proceeded regularly after the bad weather of May.

The crop in Belgium was delayed, the first stage of vegetation being slow owing to the cold unfavourable weather. With the finer weather of June conditions improved. The plants, however, are still backward.

In France the beginning of June was rainy but much warmer than May, greatly favouring the growth of beet; for a more distinct improvement, however, still higher temperatures are required. In Somme growth progressed rapidly after the abundant rains of the end of May, despite the generally rather cold weather. In Seine-et-Marne the beet had need of dry weather for the completion of singling while in the East growth improved at the beginning of June following on the favourable weather.

In Great Britain crop condition at the beginning of June was a little better in comparison with the latter half of May, when it was very unsatisfactory due to the drought and cold winds that hindered sprouting through forming a hard crust on the soil and checked the growth of the earlier-sown beets.

In Hungary on the other hand, growth was very good and hoeing and singling were carried out satisfactorily.

Crop condition in Italy was not very satisfactory not only owing to the weather at the end of May and beginning of June but because of the resowing rendered necessary by the adverse conditions in some instances; toward the middle of June crops had recovered fairly well.

In Poland the second half of May was at first cold but temperatures subsequently rose and abundant and very beneficial rains fell. Nocturnal frosts at the beginning of June, however, diminished the beneficial effects, though in general the condition of the crop remained satisfactory.

Crop condition in Czechoslovakia improved in the first days of June, especially in Moravia-Silesia, following on warm rainy weather. In Bohemia, on the other hand, dry weather was somewhat reflected in the condition of the crops.

Singling was in general carried out regularly, though better in Bohemia and, owing to heavy rains, less satisfactorily in Moravia. Parasitic damage was not in general serious.

Acreege of sugar-beet.

COUNTRIES	1935 *)	1934	Average 1929 to 1933	% 1935	
				1934 = 100	Average = 100
		acres			
Germany 1)	893,823	858,869	845,750	104	106
Austria	106,000	122,600	97,685	87	109
Belgium	124,000	132,366	134,551	93	92
Bulgaria	22,200	4,400	39,481	500	56
Denmark	104,000	102,300	89,085	101	117
Spain	175,000	250,000	213,922	70	81
Irish Free State	55,000	45,581	12,239	119	444
Finland	7,200	7,140	4,873	100	147
France	577,000	678,830	668,939	85	86
Great Britain	375,000	403,884	287,010	93	131
Hungary	91,000	93,190	144,942	98	63
Italy	220,000	220,794	252,269	100	87
Latvia	35,000	35,600	15,000	97	233
Lithuania	15,000	10,000	7,846	150	189
Netherlands	101,000	104,097	117,463	97	86
Poland	270,000	276,760	389,276	98	70
Romania	89,000	91,813	87,294	95	102
Sweden	122,300	125,077	94,460	98	129
Switzerland	3,700	3,830	3,277	97	113
Czechoslovakia	389,207	392,911	468,437	99	83
Yugoslavia	69,000	63,808	112,346	108	62
<i>Total Europe a) . . .</i>	<i>3,844,430</i>	<i>4,023,850</i>	<i>4,086,145</i>	<i>96</i>	<i>94</i>
U. S. S. R.	3,000,000	2,906,000	2,941,783	102	101
<i>Total Europe b) . . .</i>	<i>6,847,430</i>	<i>6,929,850</i>	<i>7,027,928</i>	<i>99</i>	<i>97</i>
Canada . . . . .	...	52,000	46,953	...	...
United States	985,486	789,000	784,616	—	—
<i>Total North America . . .</i>	<i>...</i>	<i>841,000</i>	<i>831,569</i>	<i>...</i>	<i>...</i>
Japan	25,000	24,750	22,722	100	109
Turkey	57,272	76,735	31,763	75	180
<i>Total Asia . . .</i>	<i>82,272</i>	<i>101,485</i>	<i>54,485</i>	<i>81</i>	<i>151</i>
GENERAL TOTALS . . . { a)	...	4,966,335	4,972,199	...	...
{ b)	...	7,872,335	7,913,982	...	...

*) Approximate data. — a) Not including U. S. S. R. — b) Including U. S. S. R. — 1) Area of sugar-beet delivered to factories.

In the U. S. S. R. it is reported that this year crop condition is very satisfactory thanks to the rapidity with which sowings were made, the progress of agricultural work and the state of vegetation.

The table of beet-sugar production in 1934-35 will not be published in subsequent numbers of the Crop Report, the campaign being practically ended.

No important changes have been reported in the estimates of sugar-beet area: in France, however, this year's area has been calculated taking into account the decrease indicated on the annual questionnaire of the Comité Central des Fabricants de Sucre.

E. R.

* * *

Germany: Crop condition of sugar-beet at the beginning of June was 3.0 compared with 2.7 at the same date a year ago.

The cold dry weather that prevailed in the greater part of May was unfavourable to hoed crops and condition of sugar-beet on 1 June was less satisfactory than at the corresponding date of last year. Growth was two weeks behind; if, however, the good weather continued, this backwardness might be rapidly overtaken.

Austria: The cold weather in May retarded growth. In places serious frost damage was reported. Hoeing was hindered by the rainy weather and weeds. Crop condition on 1 June was 2.4 against 2.1 on 1 May this year and 2.5 on 1 June 1934.

Belgium: Sugar-beet was sown at the beginning of May and singled at the end of the month.

France: The sugar-beet crop suffered from the abnormally low temperatures which prevailed throughout March and, in most areas, up to 10 June. In the north, moreover, though rainfall, inadequate up to the beginning of June, was later of benefit to crops, it was excessive in other parts and crops suffered. Crop condition in the middle of June was not very satisfactory on the whole; sprouting was irregular and fields were often infested by weeds. A return of warm sunny weather will yet save the situation which is not dangerous.

Great Britain and Northern Ireland: Sugar-beet was sown with favourable soil conditions, but, owing to lack of rain, germination and subsequent growth were slow.

A small decrease in the area under sugar-beet in England and Wales is predicted. The area in Scotland is thought to be about 7,300 acres which is about 3 % smaller than last year's area but much larger than the average of 1,100 acres of the five years 1929-33

Hungary: During the last week of May and the first half of June, weather was generally favourable for sugar-beet. The resowings have germinated well, on the whole, and their crop condition is satisfactory. Only slight damage was caused by hail.

Italy: The sugar-beet crop suffered somewhat from the unfavourable conditions of the year but during May plants quickly recovered and crop condition at present shows great improvement.

Netherlands: At 13 June, the condition of sugar-beet was 97 in the system of the Institute.

Switzerland: Condition of sugar-beet on 1 June was 103 in the system of the Institute.

Czechoslovakia: The crop has suffered severely from the frost of the beginning of May. Some areas in the west suffered from drought and some districts in Moravia and Slovakia from hail. In some places, the sugar-beet fields had to be worked and resown.

The first hoeing was finished or nearly finished at the beginning of June. In the warmer parts singling was in progress and the second hoeing had begun.

The crop condition of sugar-beet on 1 June 1935 was 2.8 in the system of the country against 2.6 on 1 June 1934.

U. S. S. R.: Sowings were made this year more rapidly than in previous years, 80 % being sown in 20 days against 24 days in 1934 and 45 days in 1933.

In the principal producing regions (Ukraine, Central Blackearth Region, Northern Caucasus) the weather in the latter half of May and first half of June favoured growth.

Production of cane-sugar.

COUNTRIES	1934-35 1)	1933-34	Average 1928-29 to 1932-33	1934-35 1)	1933-34	Average to 1932-33	Percentages for 1934-35	
	Thousand cents			Short tons			1933-34 = 100	Average = 100
AMERICA.								
Argentina	7,540	6,961	7,863	377,000	348,045	393,136	108	96
Barbados 2)	1,736	2,496	2,623	86,800	124,806	101,158	69	86
Brazil	15,432	14,330	22,000	800,000	720,000	1,099,986	108	70
Cuba	56,218	50,945	78,613	2,810,000	2,547,193	3,930,573	110	72
Ecuador	441	449	451	20,000	22,500	22,554	98	98
United States (1a)	4,680	4,100	3,584	234,000	205,000	179,200	114	131
Guadeloupe	882	921	578	40,000	46,073	28,895	96	153
Jamaica	1,676	1,609	1,291	84,000	80,000	64,536	104	130
Mexico	5,291	4,145	4,742	260,000	207,000	237,082	128	112
Peru	9,061	9,538	8,676	453,000	476,902	433,772	95	104
Puerto Rico	14,881	22,077	16,222	744,000	1,103,811	811,101	67	92
Dominican Republic	8,047	8,565	8,306	402,000	428,250	415,308	94	97
<i>Total America</i>	<i>125,885</i>	<i>126,136</i>	<i>154,349</i>	<i>6,310,800</i>	<i>6,309,580</i>	<i>7,717,301</i>	<i>100</i>	<i>82</i>
ASIA.								
Taiwan	20,360	14,265	17,725	1,018,000	713,226	886,224	143	115
India 3)	113,904	109,133	78,266	5,695,000	5,457,000	3,913,000	104	145
Japan 4)	2,321	1,635	1,915	116,024	81,740	95,773	142	121
Java	10,551	13,604	55,081	527,560	680,184	2,753,998	78	19
Philippine Is. 5)	14,110	31,526	21,572	710,000	1,580,000	1,078,572	45	65
<i>Total Asia</i>	<i>161,246</i>	<i>170,163</i>	<i>174,559</i>	<i>8,066,584</i>	<i>8,512,150</i>	<i>8,727,567</i>	<i>95</i>	<i>92</i>
AFRICA.								
Egypt	3,020	3,406	2,892	145,000	170,303	144,583	89	104
Madagascar	190	183	133	9,500	9,150	6,650	104	142
Mauritius	3,943	5,764	4,954	197,200	288,200	247,720	68	80
Reunion	1,402	1,707	1,042	70,000	85,350	52,107	82	134
Union of South Africa	8,000	7,823	6,690	400,000	391,173	334,471	102	117
<i>Total Africa</i>	<i>16,555</i>	<i>18,883</i>	<i>15,711</i>	<i>821,700</i>	<i>944,176</i>	<i>785,531</i>	<i>88</i>	<i>105</i>
OCEANIA.								
Australia	14,476	15,068	12,304	723,796	753,380	615,180	96	118
Hawaii	20,944	20,580	19,557	1,050,000	1,028,990	977,817	102	107
Fiji Is.	2,491	2,579	2,170	125,000	129,000	108,508	97	115
<i>Total Oceania</i>	<i>37,911</i>	<i>38,227</i>	<i>34,031</i>	<i>1,898,796</i>	<i>1,911,374</i>	<i>1,701,505</i>	<i>99</i>	<i>111</i>
GENERAL TOTALS	341,597	353,409	378,650	17,097,880	17,677,280	18,931,904	97	90

1) Approximate data. — 2) Including molasses reduced to terms of sugar. — 3) Production of gur. — 4) Production of sugar (refined and raw) and molasses. — 5) Production of sugar and *panocha*.

At the beginning of June crop condition was distinctly better than at the corresponding date last year and a very good crop was expected.

Hoing was carried out normally but thinning is backward, having been completed on only 54.6 % of the area on 1 June against 56.0 % at the corresponding date last year.

Leeward Islands: In April the weather continued to be very dry and rain was much needed in Antigua and St. Kitts.

Jamaica: Cane grinding continued in April under favourable conditions.

Trinidad: Prospects for the 1935 sugar crop continued to be satisfactory in April.

Taiwan: Growing conditions of the cane planted from last summer to the spring, are average.

India: In the Punjab the weather in the last decade of May and the first decade of June was dry. Crop condition was average to good though top-borer had appeared in June.

Bihar and Orissa had light rains in a number of districts during the same period and crop condition was good save in some parts of Bhagalpur, where rain was still needed.

In Madras there were showers in the South in the middle of May and on the west coast and in parts of the Deccan in the first week of June but otherwise the weather was dry. Crop condition was fair generally.

Indo-China: Harvesting in Annam was almost finished in April, yields being slightly under average. Planting of young canes was proceeding at the end of April and their growth was good on the whole. In Tonkin vegetation was satisfactory at the end of April.

Java (Aneta): During the first half of June weather was characterised by the east monsoon and was favourable for new and old plantings. The young plants have grown well. Some slight damage from rats in nurseries and from gummosis was general.

Egypt: The planting of the last areas of sugar-cane was finished in May. Condition of growth is satisfactory. The normal agricultural operations such as hoeing, irrigating and manuring are in progress.

Mauritius: In April weather conditions continued to be favourable for the standing canes, and an excellent crop was anticipated.

Union of South Africa: In April crop condition averaged 7 % below normal. Rainfall in Zululand and Alexandra county was normal but in Victoria county below normal.

VINES

Up to the present, the season has not been favourable for the growth of vines in the more important viticultural areas of Europe.

Severe frosts occurred in most countries in April and May. In France, the extent of the loss was not, on the whole, serious, notwithstanding the exceptional extent of the area affected and the seriousness of the damage in some localities. It appears to have been serious, however in Eastern Switzerland, Yugoslavia and, more particularly, the middle of Portugal and Spain. In view of the importance of the affected viticultural areas in the last country, the influence on Spanish production in 1935 will probably be marked. In Italy, Germany, Rumania, Hungary and Bulgaria the frosts caused only local damage which will not appreciably affect total output. Hail, storms and, in some places, high winds caused some injury in most countries, especially in those of Danubian Europe, South Italy, France and Portugal but the immediate effect is again local and slight.

The actual damage inflicted on the European crop as a whole by these weather conditions cannot yet be exactly gauged but on the whole it cannot

in any case be serious. It is, however, certain that the general conditions which prevailed up to the beginning of June were not very favourable for the development of the vines in most countries, especially in Western Europe.

The weather was much too cold in France, the centre of the Iberian peninsula, Italy and Switzerland. The result, on the whole, is a delay of two to three weeks in the vegetation of the vines in these countries. Though at least in the west, centre and east of France and the north of Italy clusters are not forming as well as last year or as they usually do, they were fairly plentiful in the south of France, in the central and southern parts of Italy and in the coastal areas of Spain and Portugal, where flowering also seems to have taken place in rather satisfactory conditions. In Danubian Europe, conditions were much better, while, in Greece, they were invariably good.

In the middle of June the crop appeared fairly satisfactory in France, good in Italy, very uneven in Spain and Portugal, fairly good in Romania, Hungary and Bulgaria, and perhaps even in Yugoslavia, despite the effects of the frosts, and excellent in Greece. Condition was below normal in the Central European countries: Germany, Switzerland, Austria and Luxemburg.

In North Africa conditions were rather varied. In Algeria the formation of clusters was rather good though less than last year and weather conditions were favourable up to the end of April, but May was marked by bad weather and the condition of vines was only average at the beginning of June. In Tunisia and Morocco vines were in a fairly satisfactory condition in spite of local damage caused by frost, hail, storms and winds.

Weather conditions at the end of May were such as to encourage the appearance of mildew in some areas, notably in the south of France and in the east of Algeria, but the danger of an early attack seems to have been removed by the return of fine dry weather and, at present, no appreciable attack is reported. Eudemic insects and flea-beetles are in evidence to a fair extent this year in Algeria but it is not possible at present to estimate the damage they may inflict on the crop. On the other hand, conditions hitherto have been unfavourable to the spread of oidium.

No precise information is available for Russia and the United States, but it appears that conditions have been fairly favourable, on the whole, in both South Russia and California where a good vintage is anticipated.

In the southern hemisphere the crop is plentiful and of good quality in Argentina, some of it being left on the plants. On the other hand, it was very mediocre in Australia. Information for other countries in the southern hemisphere is not available.

As regards the wine trade, a further contraction, which was expected, is to be observed in world movements. Consumption has increased in the United States, that of the first quarter of this year exceeding that of the first quarter of 1934 by 20 %. Imports into Great Britain, Austria and some countries of lesser importance have increased slightly though no increase is noticeable in consumption; it is less, in fact, in England. On the other hand, most of the importing countries, including in the first place, France, Switzerland, Belgium and Germany have reduced their purchases abroad to a more or less appreciable

extent. Moreover, all the exporting countries have experienced a further weakening in their exports in the first half of the year 1934-36. The contraction is particularly noticeable in Spain which no longer exports more than comparatively limited amounts to France and whose exports to many other countries have also fallen. Exports of French, Italian and Hungarian wines have also been rather appreciably reduced. Greece has almost maintained the volume of its exports as a result of the increase in the wine markets of Germany, Italy and Egypt but Portugal is almost the only country which has been able to increase its exports to a notable extent and, above all, to increase its sales on the French market.

The further contraction of international trade has not, however, had any appreciable repercussions save in certain vine-growing countries with peculiar conditions, such as Spain, where the economic condition of viticulture does not show any improvement and the present crisis appears to be connected in part with general factors independent of the extent of the country's resources; consumption appears to be stationary or declining and prices show on the whole a very clear tendency to fall, despite the already very low level previously touched. The Government has, however, taken several legislative measures and has recently set up a new control of alcohol derived from wine or from beet.

In the other countries the situation has developed in correspondence with the supplies existing at the beginning of the season.

In France and Algeria the steps taken by the Government by virtue of the law of 1934 on viticulture resulted in the resorption of about 132 million Imperial gallons (159 million American gallons) by obligatory distillation; the total sold by growers up to the end of May 1935 thus exceeds by about 176 (211) million gallons the quantity sold during the corresponding eight months of the preceding season, but, of this total surplus, 44 (53) million went to increase commercial stocks, which are very high; commercial consumption is a little less than last year and, even admitting that invisible consumption by the growers themselves is this year exceptionally heavy, the stock remaining at the end of the season in growers' hands and in trade will very probably exceed by more than 220 (260) millions, if not by 440 (530) millions, the normal stock. Prices have undergone fluctuations sometimes of fairly great amplitude; they rose very appreciably in January and February and fell fairly heavily in March and April; fear of serious losses from frost caused a rise in prices at the end of May but this was only small and temporary; in mid-June red wines of current type at Montpellier were 4 to 4.50 francs the degree-hectolitre (about 38 francs the hectolitre), a price not only the lowest of the season but the lowest touched in France since the War.

In Italy the small volume of supplies guaranteed from the beginning of the season an easy movement, since the last two crops of 1933 and 1934 gave a total of wine less than normal internal consumption. The import of foreign wine underwent only an insignificant increase but prices on the internal market continued their upward movement; though ordinary red table wines were quoted at Brindisi at between 4.50 and 5.50 lire per degree at the beginning of November, they were quoted at from 7 to 7.25 lire in mid-June, practically attaining the price of 80 lire per hectolitre that prevailed during 1932-33. Commercial

consumption appeared normal but it is certain that if one takes into account the invisible consumption of the growers themselves and of the rural communes as a whole, total internal consumption is below average. End-of-season stocks will in any case be small.

In Central and Danubian Europe movement appears to have been fairly regular save in Switzerland, where prices are very low and perhaps in some other countries that have a large crop, such as Romania and especially Bulgaria. In Germany prices were firm or rising at the beginning of June; in Hungary a large increase was recorded from February onward; in Yugoslavia prices rose at the end of May owing to the impression caused by the frosts.

In all, if Spain is excepted on the one hand and France and Algeria on the other and some countries of minor importance, including Switzerland, the movement of the crop has continued fairly normally in the majority of countries in the northern hemisphere and the results of the 1934-35 season appear fairly satisfactory, despite the contraction again undergone by international trade. This means that the 1934 crop in the northern hemisphere was practically average on the whole, if the exceptional production of France and Algeria is excepted; after deducting the latter and taking into account that of the United States but not that of Soviet Russia it attains, in fact, about 1,782 (2,140) million gallons against 1,694 (2,034) in 1931 and a little less than the 1,914 (2,298) million on the average of the five years 1928-32.

From June at anyrate markets began to be influenced by prospects of the new crop. These are, for the present, on the whole average; they may of course be modified in one direction or the other during the summer but from now account must be taken of certain additional facts, namely: that very low unit-yields are necessary to bring Franco-Algerian, Spanish and Portuguese supplies to a level making normal movement possible in the course of the season; that good unit yields may be obtained in Italy without bringing about a crisis of overproduction; that the surplus-producing countries of Danubian Europe seem to have practically adjusted themselves to the position created by the development of viticulture in the last few years and that consumption is increasing; that, save in exceptional cases, the size of the crop in Central European countries has had more appreciable repercussions on international trade than on the internal trade situation.

P. DE V.

Germany: Crop condition on 1 June was 2.6 on the system of the country against 1.9 on 1 June 1934.

Austria: The frosts at the beginning of May caused no serious damage to the shoots save in the early varieties of the northeastern districts of Lower Austria. In general the vines promise good yields. The rainy weather at the end of May somewhat hindered cultivation.

At the beginning of June crop condition was 2.3 against 1.9 at the beginning of May this year and 2.6 on 1 June 1934.

Bulgaria: The weather in May was generally favourable. In some areas, however, hail caused serious losses toward the end of the month. About 225,000 acres are planted this year against 225,100 in 1934 and 202,800 in 1929-33; 99.9 % and 110.9 %.

Spain: In April and May frosts caused material damage in some vineyards of Castile, but it is impossible to estimate the loss caused to the total crop at present. Moreover, the abnormal cold experienced up to May in the middle of the country checked growth and was harmful to clusters. The drought has also affected certain vineyards. The plentiful rains received in May were of benefit and have improved the situation but cryptogamic infestation has already been noticed on the vines. At the beginning of June, condition of vines was very uneven, mediocre in the central districts, especially in Castile, and satisfactory in most of the other areas.

France: Clusters were plentiful in the south and average or poor in other parts. The weather in May was unfavourable everywhere. Late frosts caused some damage in nearly all parts but, on the whole, it does not seem to be of serious extent. Hail fell in more districts and inflicted local damage and, above all, cold and wet weather delayed vegetation by about 15 days. A threat of mildew appeared in the south at the end of the month.

Crop conditions of vineyards on 1 June was 64 according to the system of the country, while on 1 June 1934 it was 68. The average crop condition in the ten preceding years, 1924 to 1933, was 65.1 but this average is relatively low, and if only the five years 1929 to 1933 are considered, the average is 67.8. The crop condition of 64 of 1 June theoretically indicates a crop of about 1,210 million Imperial gallons (1,453 million American gallons).

At the beginning of the second week of June, the weather became fine, warm and sunny in many of the viticultural areas, especially in the east-central areas but it continued wet and rather cold in most of the other districts. In the south, particularly, the uncertain and changeable weather is not favourable for flowering which has begun. On the other hand, the fears of mildew have not yet been borne out.

According to the estimate of 1st June the area of bearing vineyards this year will be about 3,999,000 acres against 4,008,000 in 1934 and 3,986,000 on the average of the five years ending 1933; percentages 99.8 and 100.3. This area includes also the area of vines pulled up during the winter and spring which amounted to 250,000 acres in 1934 and 198,000 acres in 1933. This cleared area may be still greater this year and, consequently, the decline in the area covered by bearing vineyards may be greater than that suggested by a comparison of the estimates made on 1 June of the years 1935 and 1934.

Hungary: As a result of the favourable weather of the first week of June vines are developing well in all parts. Flowering had already begun in most parts. A hail-storm on 28 May caused damage more particularly near Kecskemet. In all the other viticultural districts also more or less appreciable damage was caused by the hail.

In mid-June, thanks to the good weather, vines were in good condition and flowering of early varieties was almost at an end. Here and there mildew was reported and more frequently *cecidomya*.

Italy: The growth of vines was impeded by unfavourable weather but the position at present promises good yields everywhere.

Luxembourg: The inclement temperatures of May retarded normal development.

Area has not changed with respect to last year. Crop condition on 1 June was 2.9 in the system of the country against 2.2 on 1 May 1935 and 2.3 on 1 June 1934.

Romania: Condition of vines at the beginning of June was in general good. Spring frost caused no significant damage except in the Banat.

Switzerland: The cold weather delayed growth. Several areas suffered from frosts, especially in the north-east. Prospects are better in the west. Crop condition at the beginning of June was 80 according to the system of the Institute against 103 on 1 June 1934.

Czechoslovakia: The crop has suffered from night frosts, which occurred especially at the beginning of May, and growth was distinctly backward owing to the generally cold weather that prevailed almost throughout the month.

Palestine: An appreciable area has been planted with vines in Northern Palestine.

Algeria: In distinction from the preceding month, May was rainy throughout the country. The moisture benefited the vines in Oran, where there were fears concerning the effect of the prolonged drought on the growth and ripening of the grapes; on the whole, however, the weather was not favourable and storms were unfavourable to flowering, which had given promise of being abundant. On 1 June crop condition was only average, 100 according the system of the Institute and 50 in that of the country, as on 1 June 1934. On the other hand the rainy weather favoured mildew which appeared in the east at the beginning of June; eudemis larvae were also fairly numerous.

The extension of the vine area would appear to have been somewhat checked by government measures.

French Morocco: The rains, often of a stormy nature and accompanied by hail, that fell in May caused some damage to the vines, of which flowering was in progress. Nevertheless growth was good at the end of May and did not appear to have suffered from the drought. The damage caused by the preceding frosts proved less serious than had been expected in the Fez district (Centre) but the further frost on 23 April in the Angad (littoral) accentuated the losses of the preceding month.

Tunisia: In the Centre (Tunis and Le Kef), where nearly nine-tenths of the vineyards are situated, growth was satisfactory at the end of May and fruit formation was good; only very limited damage by violent winds and hailstorms in some localities was reported. In the Bizerta district flowering was hindered by hot and violent winds which caused rather serious damage; some shedding was expected; oïdium developed to some extent everywhere but there was little or no mildew. In the south growth was very good, the bunches were numerous and well formed and crop prospects were very good; only in the oases was mildew reported.

Australia: The first results of the vintage confirm the prospect of a mediocre yield in South Australia and Victoria. In the former which is responsible for almost all the Australian production of wine, non-official estimates indicate an output of wine 30 % below the average.

OLIVES

Italy: Flowering of olives was delayed but it is plentiful in South Italy. The position in the different districts of Central Italy shows variation.

French Morocco: Flowering was good in the central areas (Fez, Meknes) where more than a third of the olive trees of Morocco are grown, but in the south of the coastal areas (Safi, Mogador) budding was considerably hindered by the ssirocco and by attacks of psylla.

Palestine: Olives showed throughout the country the best flowering recorded in 15 years. Considerable damage to the setting of the fruit has been done by the hot weather of unprecedented duration and intensity of early May.

Algeria: May was rainy. The humidity thus added to the soil in the regions affected by drought was beneficial but the stormy weather was unfavourable to flowering. At the beginning of June conditions of the trees was only average, 100 according to the system of the Institute and 50 according to that of the country, against 120 and 70 respectively on 1 June last year.

Tunisia: In the southern districts (Susa and Sfax), where $\frac{1}{10}$ of the Tunisian olive trees are grown, vegetation at the end of the month was very good. Flowering occurred in very good conditions and was very plentiful. The growth of fruits was satisfactory in Susa, but in Sfax it was hindered by the bad weather, especially by strong winds which also caused considerable shedding in the Susa district. Psylla is widespread but does not seem to have caused serious damage. In central districts (Tunis and Kef) budding was in progress at the end of the month and conditions were satisfactory. Flowering in the north (Bizerta) was very good. The forming of fruit was impeded by warm winds which caused shedding. Crop prospects continue good.

COTTON

Bulgaria: Conditions during May were favourable for cotton but growth was hindered by the cold of the first days and the bad weather of the end of the month.

A further and very material increase in the area is notified. According to the latest estimate, an area of 104,000 acres is being cultivated this year, compared with 50,700 acres in 1934 and an average of 22,300 in the five preceding years; percentages: 204.6 and 465.2.

U. S. S. R.: During the second half of May and the first half of June, weather was dry and warm generally in Central Asia, while good rains fell in the new cotton growing regions (Ukraine, Crimea and North Caucasus).

This year sowings are 10 to 15 days in advance of last year. On the 1 June, the first operations had been carried out on 82.7 % of the area sown in collective and private holdings and on 65.1 % of the State holdings. The work of irrigation was very difficult, especially in Central Asia, owing to the low level of the water courses. On 1 June, the first irrigation had been done on 21.2 % of the area and the second on 3.7 %.

United States: During the week ending 22 May weather was generally favourable in the eastern cotton belt, except for coolness in the north-east, but too much rainfall and low temperatures made conditions decidedly unfavourable in the Mississippi Valley and the territory westward. The central States have had too much wet and cloudiness, though the crop was largely planted in parts of Arkansas. In Texas the general condition of the crop was fair to good, but growth was slow, owing to the coolness and wetness of the weather and much replanting in the northern half of the State has been necessary. There was ample subsoil moisture generally. In Oklahoma virtually none was planted, while it was necessary to replant much already seeded.

During the week ended 29 May, the weather was abnormally cool throughout the cotton belt, with rainfall light to moderate. The week was decidedly unfavourable, principally because of the coolness and the persistently wet soil in the north-west belt. Growth in Texas has been slow owing to cool nights. Much planting and replanting was to be done in the north and cultivation was needed generally. In Oklahoma the

weather was too cool and wet for planting and much remained undone. Conditions were more favourable in the central and eastern parts of the belt, where rainfall was mostly light to moderate. Much replanting was necessary in parts of Arkansas.

During the week ending 5 June, temperatures were generally above normal in the cotton belt, with moderate to heavy rains in most sections. In Arkansas progress was fair in the south, but less favourable elsewhere, because of excessive rain; only about half the crop was planted in some northern sections. In Mississippi and Tennessee too much rain fell for good results. From Alabama to the east and north-west, however, weather was mostly favourable, with higher temperatures in the north-eastern belt especially helpful. In Texas the growth of cotton was fair to good, though much remained to be planted or replanted in the northern part of the State. Generally the week was fairly favourable, except in the north western belt and some north central districts, where weather continued wet.

During the week ended 12 June, temperatures were somewhat below normal in most of the cotton belt, but rainfall was light to moderate, and the week was generally more favourable than the preceding one. In Texas planting and replanting made rapid progress in sections that were previously too wet. Stands were mostly fair to good, but growth was slow because of cool nights and recurring showers. In Oklahoma the progress of planting was fair to good, but much remained to be seeded, with work a month late. Early cotton was in poor condition, but warmer sunny weather in the latter part of the week was favourable. In most central sections progress was generally fair to good. In the Atlantic States the week's weather was mostly favourable, but rather too cool. In the north-eastern portion of the belt cotton showed improvement.

During the week ended 19 June, temperatures averaged considerably above normal in the eastern cotton belt, near normal in the central cotton belt, and mostly below normal in the western belt. Rainfall was substantial to heavy in the Mississippi Valley westward, and mostly light to moderate in the eastern States. The week was generally favourable in the eastern and south-central portions of the belt, but unfavourable in the north-central and western parts. In Texas progress was mostly poor owing to wet weather and cool nights. There was considerable damage as a result of the continued rains, which are favouring insects and hindring cultivation, and a period of fine warm weather is needed. Planting in Oklahoma made slow progress in the central and eastern parts and, although planting progress was mostly good elsewhere in the State, much remains to be planted or replanted. Conditions in Alabama were rather unfavourable, but in the Atlantic States conditions were favourable.

Revised estimate of the cotton crop of 1934.

	1934	1933	Average 1928-32	% 1934	
				1933 = 100	Average = 100
Area in cultivation, 1 July (In thousands of acres)	27,883	40,852	41,437	68.3	67.3
Per cent. of abandonment	3.2	1.3	2.2	—	—
Area harvested (In thousands of acres)	26,987	1) 29,978	40,514	90.0	66.6
Production of cotton lint (In thousands of bales of 478 lb.)	9,636	13,047	14,666	73.9	65.7
Yield of lint per harvested acre (In Pounds)	170.9	258.5	173.8	82.0	98.3

1) About 10,495,000 acres were ploughed-up under A. A. A. contracts after 1 July; the per cent. of abandonment of 1.3 refers to the remaining area not under contract.

Mexico: Sowing of cotton was proceeding during April in the main producing areas of the country. It was estimated that the area intended for this crop would be on the whole, smaller than last year, the decrease being most appreciable in Comarca Lagunera owing to the scarcity of rain.

China: The final estimate of the 1934-35 cotton crop in China, published by the Chinese Cotton Statistics Association, Shanghai, puts the picked area at 6,828,000 acres an increase of 11.2 % on that of last season and 30.7 % on the five seasons average ending 1932-33, while production is estimated at 14,930,000 centals of lint (3,123,400 bales of 478 lb. net weight), an increase of about 15 % on last season and 41 % on the average. This estimate covers only the following eleven provinces: Shensi, Shansi, Hopeh, Shantung, Honan, Kiangsu, Anhwei, Hupeh, Hunan, Kiangsi and Chekiang, of which the most important cotton growers are at present Hopeh (25 % of the total), Hupeh (17 %), Kiangsu (15 %), Shantung (12 %), Honan (9 %) and Shensi (9 %).

India: The weather in the Central Provinces in the last decade of May and first decade of June was hot and on the whole rather cloudy.

In the Punjab dry conditions were experienced throughout this period. Though stem-borer was reported in June in parts of Rohtak, crop condition was in the province as a whole average to good.

Madras experienced showers in the South, on the west coast and in parts of the Deccan, though the last week of May was practically rainless throughout the Presidency. Crop condition was generally fair.

Indo-China: In Cambodia picking, which was in progress at the end of April, was giving yields around 350 lb. of seed cotton per acre.

Egypt: The growth of cotton was considerably better on 15 May, after having been affected by intense heat followed by exceptional night moisture. During the second half of May weather continued favourable and temperature tended to rise. In Upper Egypt weather was generally favourable throughout May. Cotton-worm egg-masses (*Prodenia littoralis*, Boisduval) have been observed everywhere in the Delta and Fayum. Their appearance in May is earlier than usual and is probably the result of the great heat of the early part of the month. The infestation is more widespread than last year. The Government has adopted serious measures and cultivators are making an effort to exterminate them and the gathering of the eggs is proceeding. Here and there are cases of cotton cut-worm (*Agrotis ypsilon*, Van Rottemburg), green worm (*Caradrina exigua*, Hubner), aphid (*Aphis gossypii*, Glover), wilt (*Fusarium*) in the Sakellaridis crop, and also "sore-shin", a cryptogamic disease which cannot withstand heat above 93° F.

The favourable weather conditions brought about a general improvement in the growth of plants and the formation of branches. Buds and flowers have a good appearance in the early crops of Upper Egypt and South of the Delta. Bolls are forming in Upper Egypt. Irrigation and hoeing are progressing generally. The level of the Nile is normal. Medium and late crops are a week late on the whole.

According to the third and final estimate issued by the Egyptian Government on the first Monday of June, production of ginned cotton for the 1934-35 season is estimated at 7,483,500 centals (1,565,600 bales of 478 lb. net weight) as against 8,493,600 (1,776,900) in 1933-34 and a yearly average of 7,168,800 (1,499,700) during the five seasons.

ending 1932-33; percentages: 88.1 and 104.4. Production is distributed as follows, according to staple length, in thousands of centals and bales (ooo' omitted):

Staple length in inches	Thousand centals	Thousand bales of 478 lb. net weight
Long staple: above 1 $\frac{3}{8}$ ''	1) 2,197	2) 460
Long-medium staple: above 1 $\frac{1}{4}$ ''	210	44
Medium staple: above 1 $\frac{1}{8}$ ''	4,914	1,028
Scario (linters)	163	34

1) Including 993,000 centals of Sakellaridis. — 2) Including 207,700 bales of Sakellaridis.

The area picked is distributed respectively as follows, in thousand acres: 803 for the first group; 69 for the second, and 925 for the medium staple group.

Nigeria: Exports of ginned cotton up to 9 March 1935 amounted to 193,784 centals (40,541 bales of 478 lb.), that is, more than double the quantity exported during the previous season.

Nyasaland: It was reported in April that a good cotton crop was expected.!

Uganda: According to the most recent report, the production of ginned cotton in 1934-35 is estimated at 983,000 centals (205,700 bales of 478 lb.) as compared with 1,091,000 (228,200) in 1933-34 and 819,000 (171,400) on the average of the preceding five seasons. Percentages: 90.2 and 120.0.

Anglo-Egyptian Sudan: According to the May estimate, the production of cotton, picking of which was practically completed, is 1,084,000 centals (226,800 bales of 478 lb.) against 645,500 centals (135,100 bales) in 1934 and an average of 674,600 centals (141,100 bales) in the years 1929 to 1933. Percentages: 167.9 and 160.7. Production this year thus exceeds the previous record of 1931-32 (1,017,000 centals or 212,800 bales). The yield this year of 295 lb. per acre is also the highest recorded in the Sudan. About 84 % of the output consists of Sakellaridis grown in the Gezira, Tokar and Kassala. The remainder is American cotton either irrigated by pumps or rain grown. The latter variety is chiefly grown in Kordofan which produces about 90 % of it.

FLAX AND HEMP

Belgium: Owing to the exceptional May weather, the flax crop has suffered and was in need of warmth.

Bulgaria: Despite the low temperatures in the first days of May and the storms toward the end of the month hemp developed well. The area cultivated this year is estimated at about 13,600 acres against 14,000 in 1934 and 10,200 in 1929-33; percentages: 97.0 and 132.9 %.

France: Flax suffered from the abnormally cold weather that prevailed in May and in some areas until about 10 June; sprouting was often rather irregular and the crop was infested by weeds in some districts. In the north the rise in temperature at the beginning of June and the rains toward the same date improved crop condition but this remained rather unsatisfactory on the whole toward 10 June.

The extension of the crop is confirmed by the latest estimates of area sown this year; this varies from 86,000 to 99,000 acres, approaching the former rather than the latter figure; this would, however, remain about 40 % above the area cultivated last year and about 60 % above the five-year average.

According to the estimate on 1 June the area cultivated to hemp this year is about 6,500 acres against 6,600 in 1934 and 8,400 on the average of the five years ending 1933; percentages 98.1 and 77.3. Crop condition on 1 June was 63, according to the French system, that is, below the average.

Area and Crop Condition of Flax.

COUNTRIES	AREA SOWN					CROP CONDITION †)								
	1935	1934	Average to 1933	% 1935										
				1934 = 100	Aver = 100									
						1,000 acres			I-VI-1935			I-V-1935			I-VI-1934
						a)	b)	c)	a)	b)	c)	a)	b)	c)
Germany	51	22	20	235.5	257.2	—	—	—	—	—	—	—	—	—
Austria . . . .	...	4	7	...	...	2.7	—	—	—	—	—	2.5	—	—
Bulgaria	10	4	1	229.0	941.2	—	—	—	—	—	—	—	—	—
France	56	58	54	97.2	104.8	—	—	63	—	—	—	—	—	—
Czechoslovakia .	28	23	27	117.2	101.8	—	—	—	—	—	—	—	—	—
Canada	217	227	463	95.6	46.8	—	—	—	—	—	—	—	—	—
India	3,381	3,261	3,096	103.7	109.2	—	—	—	—	—	—	*	—	—

†) For an explanation of the signs and of the figures of crop conditions, see the note on page 409 and the cereals table.

In Sarthe, which is by far the most important hemp producing *département* and which in 1933 cultivated 58 % of the total area cultivated in France, sowings were made in poor conditions owing to the excessive rain and the abnormally low temperatures.

Great Britain and Northern Ireland: As a general rule the flax brairds in Northern Ireland are looking healthy, but growth is rather backward. The frosts and the drought caused some damage in a few districts, while complaints of uneven brairding have also been received.

Hungary: Flowering of the flax crop had begun at the end of the first week in June. It was rather short owing to the frosts of May.

According to the most recent estimate production of flax fibre from the area mainly cultivated for fibre this year was about 2,830 thousand pounds against 2,670 in 1934. Percentage 106.3.

In the middle of June hemp was vigorous and well developed but the drought threatened to impede subsequent growth.

Italy: The crop had a good appearance and gave grounds for expecting higher yields of seed and fibre than in 1934.

Czechoslovakia: Crop condition of flax on 1 June in the greater part of the flax-growing area varied between average and good.

On 1 June of the current year condition of hemp was above average.

U. S. S. R.: At the beginning of June sowing of flax for fibre had been completed and unless additional sowing were made the area cultivated for fibre will this year be about 5,100,000 acres against 5,200,000 in 1934 and 5,278,000 on the average for 1929-1933; that is, 1.4 % less than last year and about 3.1 % below the average.

Owing to the backwardness of the season in the southeast and centre, where the production of flax for fibre is concentrated, growth is backward.

In a number of areas weeds are prevalent.

India: According to the most recent estimate production of linseed this year is about 9,363,000 centals (16,720,000 bushels) against 8,422,000 (15,040,000) in 1933-1934 and 8,532,000 (15,236,000) on the average of the five years ending 1932-33; percentages 111.1 and 109.7.

HOPS

Great Britain and Northern Ireland: Hop bines are generally reported to be healthy, but the persistent cold winds have retarded growth and in some districts the heads have been damaged by frost. The crop however, showed a marked recovery by the end of May. There is a small increase in the area under hops in some districts.

Hungary: By the middle of June hops had developed vigorously and had recovered from the damage caused by frost.

Czechoslovakia: The growth of hops was checked by the cold in May but crop condition on 1 June was good.

TOBACCO

Belgium: Some tobacco plants were frozen during the cold weather of May.

Bulgaria: Transplanting of tobacco continued during May in good conditions, despite the cold of the early part and the bad weather of the end of the month. The area under tobacco shows a fairly noticeable increase compared with last year but it remains below the average of the preceding five years.

According to the most recent estimate, the area this year is about 57,000 acres against 49,100 in 1934 and 75,000 on the average. Percentages: 115.8 and 75.6.

Hungary: Tobacco was growing vigorously at the end of the first week of June. At this time replacing of the plants that had been damaged by frost or hail had begun. At the middle of June, however, the dry weather hindered further growth.

Indo-China: The crop is poor in Cambodia and South Annam where there has been drought. In North Annam vegetation at the end of April was normal.

Palestine: The transplanting of tobacco commenced toward the end of the month, but was suspended during the hot spell in early May, in Arabic *Khamsin*.

Algeria: May, unlike the preceding months, was wet. Work of cultivation and sowings were done in excellent conditions. The growth of crops was satisfactory and their appearance at the end of the month was good. Condition on 1 June was 120 in the system of the Institute and 70 in that of the country while a year ago it was 100 and 50 respectively.

The area cultivated is again smaller.

Contrary to expectations, the area instead of showing an increase, is slightly smaller than that of last year and even than the average.

According to the first estimate, the area cultivated to tobacco this year is about 53,100 acres against 56,800 in 1934 and 53,700 on the average of the five years ending 1933; percentages 93.5 and 98.9.

Nyasaland: It was reported in April that buying was in progress in the Southern Province but that the crop was disappointing.

Tunisia: Crop condition was good in the south (Gabès) at the end of May.

OTHER PRODUCTS

Cacao.

Brazil: After three weeks of stormy weather in Bahia there was an improvement in the middle of May. Damage was, however small. Only the districts of Belmon and Cannavieiras were affected and then only slightly; though April flowering was destroyed in these two districts, it does not decisively affect the final output.

Arrivals at the port of Bahia in the first half of May were small. The Instituto de Cacau estimated that a total of 1 million pounds would be received at the port of Bahia during May and that, if weather was not unfavourable, 16 million might be considered a safe estimate for June. Only a little remained to be sold of these quantities and there was a large demand for meeting urgent contracts closed for shipment during May, the majority of which would not be fulfilled within the stipulated period, owing to lack of suitable cacao.

Mexico: The condition of cacao trees at the end of April in Tabasco and Chiapas was satisfactory. Harvesting of the main crop which was in progress at the beginning of May promised yields larger than those of last year.

Trinidad: Weather conditions in April were favourable for reaping and drying. The crop was reported to good on the whole.

Gold Coast and British Togoland: MAJOR CROP. — During March new beans were observed at several inspection centres — a small mid crop — increasing the total outturns of major crop. By the end of April buying had practically ceased in most centres though cacao continued to come in longer than had been anticipated. Prices were steady up to the end of the month.

The total exported from the ports from October to April was 430 million pounds, while the estimated export over the Eastern Frontier was 20 million, in all 450 million pounds. The estimated stocks on hand at the end of April were 137 million. Subtracting the 6 million pounds carried over from the last minor crop or estimated to belong to the new minor crop, the total major crop is estimated at 581 million pounds.

The following are the data of crop movement in the first seven months of 1934-35, in millions of pounds:—

	April 1935	Oct. 1934 to April 1935	April 1934	Oct. 1933 to April 1934
Railway offloadings, Takoradi	26	177	9	177
Exports:				
Takoradi	22	132	27	150
Accra	21	164	33	149
All ports	54	387	72	370

Inspection under Ordinance 14-1934 ceased at up-country centres at the beginning of April, the work being continued, however, at the ports. The total inspected at all centres from October to the end of April was 571 million pounds, including carryover of about 4 million from previous minor crop but not including the amount exported over the Eastern Frontier. Up to the end of April nearly 22 million had been rejected and of this a fairly large proportion has probably been reinspected. Thus the total inspection figure contains an unknown amount inspected twice. The following are the inspection averages for all centres in March and for all ports in April:—

	Tonnage examined (million lb.)	Number of beans per		Size of beans in mm.		
		14 cu. in.	14 oz.	length	breadth	thickness
March	77	127.2	105.1	22.9	12.4	7.0
April	21	133.7	108.5	22.5	12.0	6.8

MINOR CROP. — In Ashanti reports indicated in April that the minor crop was small and it was probable that in the more remote areas the pods would not be picked. In the Colony a minor crop of about 9 million pounds, of which some had been marketed, was estimated in the Winneba district; elsewhere the crop was small and was beginning to come on to the market only at the end of April.

MAJOR CROP 1935-36. — Flowering was general in March, and the weather was moderately good for growth. In April flowering was proceeding normally and the weather was generally favourable for growth.

Tea.

India: In Northern India the weather in May continued to be hot and dry and, owing to the lack of rain, crop prospects were only fair. Up to the end of April 36,600 lb. in advance of the production up to the same date last year were produced.

In South India the weather in May was warm and showery and prospects were good. Outturn up to the end of April was 7.47 % ahead of that to the same date last year.

Indo-China: Harvesting was proceeding regularly in Tonkin at the end of April but it was poor. The spread of blister was almost completely checked.

Japan: Weather conditions during May were favourable to tea, crop condition of which on 1 June was average.

Nyasaland: In April the tea season was nearly over and pruning was in progress. Production was estimated to be about 1,000,000 lb. above last year's crop.

Coffee.

Brazil: According to the figures of the National Coffee Department, the total quantity of coffee destroyed up to April was 46,220,000 centals, 1,045,000 centals of which was destroyed during the first four months of this year.

Indo-China: In Tonkin infestation of *Hemileia vastatrix* had diminished toward the end of April but had caused serious losses on some plantations of *arabica* and *excelsa*.

Kenya: In April coffee trees appeared to be healthy and an excellent early picking was expected.

Groundnuts.

Indo-China: The yields obtained in Central and South Annam were average or mediocre according to district.

Egypt: Sowing of the early groundnut crop began at the end of April and was finished before 15 May. The main crop is sown in May. Germination and grow this good.

Colza and sesame.

Austria: Toward the end of May colza flowered. The seeds are numerous. Crop condition on 1 June was 2.2 against 2.1 on 1 May this year and 2.4 on 1 June 1934.

Bulgaria: At the beginning of June harvesting of colza had begun. A large production was expected thanks to the appreciable extension of area and to the good weather. According to the most recent estimates the area cultivated this year was about 54,400 acres against 39,700 in 1934 and 13,900 on the average of 1929-33; 136.8 % and 391.5 %.

Hungary: According to the most recent estimate production of colza this year will be about 227,000 centals (454,000 bushels) against 183,000 (366,000) in 1934 and 178,000 (356,000) on the average of the five years ending 1933; percentages 124.0 and 127.5.

Poland: On 15 May condition of winter colza was 2.1 Crop reporters continued to notify the appearance of *Meligethes acneus* in large numbers in Lodz, Kielce, Lublin and Poznań. Summer colza appeared better (2.7) than winter colza. On 15 May of last year condition was 2.9 for winter colza and 2.6 for spring colza.

Romania: Harvesting of colza began later than usual this year. The damage caused by frosts and insects is considerable. Total production, however, will be greater than that of last year.

India: The final estimate of the rape and mustard crop is as follows:—

	1931-35	1933-34	Average 1928-29/ 1932-33	% 1934-35 1933-34 = 100	Average = 100
Area (000 acres) . . .	5,316	6,034	6,404	88.1	83.0
Production (000 centals).	20,048	21,123	22,893	94.9	87.6

Indo-China: In Tonkin growth of early sesame was generally bad at the end of April; that of late sesame was good.

Palestine: In the South the sesame has all been sown and notwithstanding the failure of the later rains, the area under this crop is very considerable, while in the North it is greatly in excess of that of last season.

Jute.

India: Toward the end of May and in the early part of June sowing proceeded in Bihar and Orissa in the districts of Purnea, Cuttack and Balasore. In the first decade of June the Jute was partly damaged by floods on the lowland areas in parts of Bhagalpur, in the same province.

Sericulture.

Bulgaria: Weather conditions during May were favourable for silk-worm rearing. According to the official estimates, incubations of silk-worm eggs this year are slightly greater than those of last year but they are below the average of 1929 to 1933. They are estimated this year to amount to about 27,900 ounces against 27,300 ounces in 1934 and 33,100 ounces on the average in the preceding five year years. Percentages: 102.1 and 84.1.

Italy: Mulberry trees have suffered from frost and growth was delayed but the production of leaves is sufficient to meet requirements. The rather unfavourable season obliged farmers to destroy a quantity of small cocoons at the end of May. There are cases of flaccidity everywhere, especially in the Udine province. On the whole, the situation of silk-worm raising at the beginning of June was fairly satisfactory and in some areas cocoons are in the final stages of development.

Indo-China: In Tonkin heavy infestation by mites or fleas seriously damaged the mulberries in one area. In Annam leaf production in April was large; rearings revived actively in April in the north but drought was injurious in the south.

Japan: Condition of mulberry leaves at the beginning of June was average and rearing of silk-worms was proceeding in normal conditions. Weather during May was favourable.

TOTALS OF WORLD AGRICULTURAL PRODUCTION

The following totals have been obtained from the data in the tables published for each product in February, which have been revised and completed. With the name of each product is indicated the number of countries for which data for 1934 are at present available and also the percentage of their total production in 1933 to world production in the same year as published in the 1933-34 Yearbook, where they comprised nearly all producing countries, including the U. S. S. R., the 1934 figures for which are not yet available except in the case of cereals and cotton.

Crop, number of countries comprised in the total and percentages of world production	AREA						PRODUCTION									
	1934 and 1934-35	1933 and 1933-34	Average 1928 and 1928-29 to 1932-33	Percentages for 1934 and 1934-35		British measures			American measures			Percentages for 1934 and 1934-35				
				1933 and 1934 = 100	Average 1933-34 = 100	1934 and 1934-35	1933 and 1933-34	Average 1928 to 1932 and 1928-29 to 1932-33	1934 and 1934-35	1933 and 1933-34	Average 1928 to 1932 and 1928-29 to 1932-33	1933 and 1933-34 = 100	Average 1933-34 = 100			
Thousand acres						Thousand centals			Thousand bushels							
Wheat ^{150 countries a)} _{51 " 98 % b)}	234,949 322,055	243,118 325,158	250,052 330,511	96.6 99.0	94.0 97.4	2,020,607 2,691,035	2,216,482 2,827,826	2,256,986 2,735,567	3,367,612 4,484,969	3,694,063 4,712,949	3,761,568 4,559,187	91.2 95.2	89.5 98.4			
Rye ^{30 countries a)} _{31 " 100 % b)}	46,271 108,048	46,098 108,864	47,181 112,516	100.4 99.3	98.1 96.0	528,869 972,661	587,230 1,120,530	540,059 1,013,040	944,411 1,736,899	1,048,627 2,000,951	964,394 1,809,006	90.1 86.8	97.9 96.0			
Barley ^{45 countries a)} _{46 " 91 % b)}	56,966 —	60,023 —	64,298 —	94.9 —	88.6 —	615,954 766,750	640,990 814,053	706,652 838,313	1,283,260 1,597,425	1,335,418 1,695,973	1,472,218 1,746,516	96.1 94.2	87.2 91.5			
Oats ^{140 countries a)} _{141 " 99 % b)}	89,891 —	95,794 —	100,704 —	93.8 —	89.3 —	854,468 1,271,143	991,755 1,331,488	1,141,564 1,454,798	2,670,195 3,972,295	3,099,212 4,160,872	3,567,362 4,546,211	86.2 95.5	74.9 87.4			
Maize ^{126 countries a)} _{127 " 83 % b)}	147,289 —	161,298 —	157,255 —	91.3 —	93.7 —	1,529,015 1,613,672	1,897,532 2,003,354	2,047,971 2,123,634	2,730,391 2,881,566	3,388,459 3,577,427	3,657,101 3,792,214	80.6 80.5	74.7 76.0			
Rice (rough) (14 countries, 81 %)	108,650	110,605	109,575	98.2	99.2	1,518,587	1,636,694	1,595,365	3,374,571	3,637,023	3,545,182	92.8	95.2			
Potatoes (35 c. 72 % a)	31,519	31,296	30,760	100.7	102.5	3,499,903	3,214,139	3,267,658	5,833,055	5,356,791	5,445,989	108.9	107.1			
Sugar-beet (24 countr. 92 %)	7,527	7,468	7,532	100.8	99.9	1,339,822	1,210,968	1,299,336	Thousand short tons			66,9901	60,5481	64,966	110.6	103.1
Cotton (ginned) (17 countries, 92 % b)	67,342	70,038	78,551	96.2	85.7	101,422	117,890	118,869	Thousand bales of 478 lb.			21,218	24,663	24,868	86.0	85.3
Linseed (23 countries, 79 %)	12,738	10,816	14,374	117.8	88.6	61,406	52,893	65,164	Thousand bushels			109,653	94,453	116,365	116.1	94.2
Flax (fibre) (20 countries, 98 %)	6,086	6,669	5,745	91.3	105.9	15,082	14,897	13,519	Thousand pounds			1,508,187	1,489,668	1,351,879	101.2	111.6
Hemp seed (8 c. 14 % a)	262	259	250	101.0	105.0	961	994	963	96,122	99,429	96,342	96.7	99.8			
Hemp (fibre) (11 countries, 49 %)	568	541	578	105.0	98.3	3,772	3,549	3,904	377,212	354,945	390,440	106.3	96.6			
Hops (8 countr., 99 %)	124	114	136	108.7	90.9	1,153	1,036	1,206	115,302	103,618	120,593	111.3	95.6			
Tobacco (18 countries, 44 %)	2,175	2,592	2,844	83.9	76.5	18,219	21,500	22,836	1,821,906	2,149,955	2,283,556	84.7	79.8			
Olive oil (9 countries, 96 %)	—	—	—	—	—	14,853	16,444	17,237	Thousand Imperial gallons			195,162	216,081	226,484	90.3	86.2
Vines (17 countr. 84 %)	—	—	—	—	—	3,861,120	3,105,746	3,364,525	Thousand pounds 3)			4,636,858	3,729,722	4,040,492	124.3	114.8
Silk (7 countr. 90 %)	2) 6,490	2) 7,274	2) 7,383	89.2	88.0	832,682	955,127	954,131	832,682	955,127	954,131	87.2	87.3			

a) Not including the U. S. S. R. — b) Including the U. S. S. R.

1) Wine. — 2) Thousand ounces of eggs in incubation. — 3) Cocoons.

FODDER CROPS

Germany: The cold dry weather that prevailed in the greater part of May was unfavourable to crops, particularly to fodder crops; on 1 June condition varied greatly according to crop and district but, despite a deterioration with respect to the previous month, it was better than at the corresponding date of last year, save in the case of clover and irrigated meadows, of which condition was the same as a year previously.

Austria: Temporary meadows developed very slowly due to the cold weather particularly in the mountain areas. Given the delay in commencing the utilization of green fodder the temporary meadows have been cut prematurely in places owing to the shortage of fodder.

Growth of mangels is also backward.

Development of permanent meadows is very slow. Owing to repeated frosts the more delicate and more nutritive grasses have deteriorated while weeds have developed to the detriment of hay quality.

Utilization of pasture is intensive despite the poor growth of grass. It was not possible to utilize alpine pastures until toward the beginning of June save to a limited extent.

Belgium: Pastures are giving little feeding and fodder crops are thin.

Bulgaria: Weather conditions in May were generally favourable to the growth of fodder crops.

The following are the provisional official estimates of the areas cultivated this year compared with those of last year and the averages of the preceding five years.

	1935	1934 (acres)	Average 1929-33	% 1935 = 100	Average = 100
Permanent meadows	711,700	694,200	772,000	102.5	92.2
Temporary meadows	73,600	79,000	65,900	93.2	111.7
Vetches	310,900	435,000	372,700	71.5	83.4
Mangels	7,400	4,900	4,000	150.5	187.4
Millet for fodder	41,300	39,700	38,100	104.0	108.4

Estonia: Temperatures were lower than usual during the first two decades of May. Weather was warmer during the third decade but, owing to the lack of rain, growth was delayed.

France: The abnormally cold and rainy weather that prevailed in the majority of districts during May and the early part of June was not favourable to temporary or permanent fodder, of which the cutting had been delayed and rendered difficult by the bad weather; quantity is in general good or average but quality frequently leaves something to be desired, save in some higher districts in the east where harvesting is later. Pasture and meadows are, on the other hand, in fairly good condition, as well as fodder vegetables, despite the delay due to bad weather.

The Condition of Fodder Crops.

CROPS AND COUNTRIES	CROP CONDITION †)								
	1 June 1935			1 May 1935			1 June 1934		
	a)	b)	c)	a)	b)	c)	a)	b)	c)
CLOVER:									
Germany	—	—	3.2	2.9	—	—	—	—	3.2
Austria 1)	2.5	—	—	2.2	—	—	2.8	—	—
Lithuania:									
annual	3.1	—	—	—	—	—	—	3.0	—
biennial	—	—	2.5	—	—	—	—	—	2.2
Poland	—	—	2) 2.6	—	—	2) 2.9	—	—	2) 2.5
Canada 3)	—	—	88	—	—	94	—	—	85
Egypt (bersim).	—	100	—	—	100	—	—	100	—
ALFALFA:									
Germany	2.7	—	—	2.4	—	—	2.9	—	—
Austria	2.4	—	—	2.1	—	—	2.9	—	—
Canada	—	—	88	—	—	—	—	—	66
MANGOLDS:									
Germany	—	—	3.1	—	—	—	2.9	—	—
Austria	2.5	—	—	—	—	—	2.8	—	—
France	—	63	—	—	—	—	—	67	—
Switzerland	—	—	94	—	—	—	—	—	—
TEMPORARY MEADOWS:									
Austria 4)	2.4	—	—	2.2	—	—	2.4	—	—
France:									
leguminous crops	—	66	—	—	—	—	72	—	—
annual green fodder crops	—	67	—	—	—	—	—	70	—
artificial meadows 5)	—	66	—	—	—	—	—	70	—
Sweden	—	—	2.7	—	—	—	—	—	2.9
Switzerland	—	—	95	—	—	97	—	—	—
United States 6)	—	—	77.6	—	—	—	—	—	51.9
PERMANENT MEADOWS:									
Germany:									
irrigated meadows	2.9	—	—	2.5	—	—	2.9	—	—
other meadows	—	—	3.2	2.7	—	—	2.7	—	3.4
Austria	2.9	—	—	2.4	—	—	—	—	—
France:									
pastures	—	62	—	—	—	—	—	69	—
meadows	—	63	—	—	—	—	—	69	—
Lithuania	—	—	2.5	—	—	—	—	—	2.8
Poland:									
ordinary meadows	—	—	2) 2.2	—	—	—	—	—	2) 2.2
low meadows	—	—	2) 2.2	—	—	—	—	—	2) 2.9
meadows improved	—	—	2) 2.7	—	—	—	—	—	2.8
Switzerland	—	—	94	—	—	99	—	—	—
PASTURES:									
Austria	—	3.2	—	2.6	—	—	2.2	—	—
Poland:									
permanent pastures	—	—	2) 2.0	—	—	—	—	—	2) 2.3
temporary pastures	—	—	2) 2.3	—	—	—	—	—	2) 2.5
Switzerland	—	—	87	—	—	—	—	—	—
Canada	—	—	85	—	—	—	—	—	81
United States	—	—	77.7	—	—	—	—	—	53.2

a) Above the average. — b) Average. — c) Below the average. — †) See explanation of the various systems on page 409. — 1) Red clover. — 2) At the middle of the preceding month. — 3) Clover and hay. — 4) Klee grass. — 5) Graminaceous and mixed graminaceous and leguminous crops. — 6) Hay.

According to the enquiry into crop conditions on 1st. June, the areas sown to various fodder crops are as follows:

	1935	1934	Average 1929-33	% 1934 = 100	% 1935 Average = 100
	(thousands acres)				
<i>Mangolds</i>	1,989	1,946	1,842	102.3	108.0
<i>Temporary crops:</i>					
leguminous crops	7,348	7,375	7,243	99.6	101.4
graminous and mixed legumi- nous crops	1,328	1,348	1,141	98.5	116.4
graminous crops (annual fod- der crops for hay)	1,682	1,718	1,688	98.0	99.7
<i>Total</i>	10,358	10,441	10,072	99.2	102.8
<i>Permanent meadows:</i>					
grass	4,785	4,660	4,718	102.7	101.4
meadows	13,768	13,676	13,224	100.7	104.1
<i>Total</i>	18,553	18,336	17,942	101.2	103.4
GRAND TOTAL	30,900	30,723	29,856	100.6	103.5

Great Britain and Northern Ireland: The weather during May was for the most part cold and dry with severe frosts about the middle of the month.

During the cold spell the growth of permanent and temporary grass was practically at a standstill and very little progress was made during the month. It is anticipated that hay yields will be below average.

Pastures throughout May were very bare and badly in need of warm rain.

Mangolds were sown under favourable soil conditions, but, owing to the lack of rain, germination and subsequent growth were slow. The sowing of turnips and swedes was progressing at the end of May. Rain was needed to stimulate germination and growth. In a few areas plants have already been attacked by fly while in Scotland resowing was necessary in several districts.

Hungary: At the end of the first week of June mangels were growing well. Losses through hail were not serious. The first cut of red clover and alfalfa was generally completed. Yield was average. Other temporary fodder crops (mixture of oats and vetches, sainfoin, etc.) developed vigorously. The first cut of permanent meadows gave an average yield. Growth of pastures was renewed more actively after the rain of the first week of June.

In the middle of June mangels were generally making good progress and foliage was coming on well. The first and even the second hoeing was proceeding. Other fodder crops (mixtures of oats, vetches, sainfoin, etc.) are flagging somewhat owing to the drought. Cutting in meadows is finished, yields being average.

The aftermath and pasture grass benefited from the recent rains.

Italy: The growth of fodder crops was seriously hindered by the unfavourable weather. The first cut on the whole, owing to the long drought and the low spring temperatures, was poor and haymaking was impeded to some extent by the rain in May. An adequate second cut is expected.

Latvia: Condition of animal clover on 15 May was average in 40.4 % of the replies of crop correspondents, above average in 23.8 % and below average in 35.8 %. The corresponding percentages for biennial clover were 33.5, 7.9 and 58.6; for permanent meadow 20.6, 2.6 and 76.8. Cold accounted for about four-fifths of the losses and drought for about one-fifth.

Netherlands: The rather cold weather was unfavourable to the growth of grass.

Poland: As a result of the cold weather, crop condition of meadows and pastures on 15 May was appreciably below average and a good first cut was not expected. Between 15 May and 5 June better weather conditions brought about an improvement in the fodder crops, which, at the beginning of June were judged satisfactory.

Romania: The first cut of clover and alfalfa gave good yields.

Switzerland: Growth of meadows suffered from the cold wet weather and the late frosts. Permanent meadows suffered in places from the drought of last year and from white worms. Prospects are for a yield of hay equal to about four-fifths of very large crop. Alpine pastures were still backward at the beginning of June.

Czechoslovakia: Condition of mangels is not satisfactory, particularly in the west. The vigorous development of clovers, alfalfa and meadows that was expected was hindered by the cold and in some parts of the country, even dry weather. These crops were damaged by frosts. Clover is rather thin. Green fodder being inadequate, farmers had to have recourse to premature cutting of alfalfa in the green condition; it was already for the most part cut in the first half of May.

On 1 June condition of clover, alfalfa and meadows varied from average to above average.

Algeria: May was rainy and fairly favourable to pasture but the rains were an obstacle to the bringing in of the crops of which the quality consequently left something to be desired.

Egypt: Cotton leafworm (*Prodenia littoralis*) has appeared in some districts where bersim is cultivated, having spread through lower and Middle Egypt; the necessary measures have been taken to combat it. The last cut of bersim has been made. The seed is forming satisfactorily on the areas left for seed; early crops are ripening and cutting has begun.

French Morocco: The rainfall of May effected some improvement on grazing lands and pastures but the latter generally dried up quickly. Fodder supplies for the summer appear insufficient in many cases, particularly among natives.

Tunisia: Hay production in the northern and central areas was very plentiful but, as haymaking was hindered by rain from 20 to 23 May in the Bizerta district, the quality of the harvest is only average in this area. In the south, haymaking was carried out in satisfactory conditions but the outturn was reduced by the drought. Similarly, pastures are still well supplied in the northern and central areas, while in the south they are drying up quickly. At the end of the month, however they were still yielding enough bite for animals in the latter area.

LIVESTOCK AND DERIVATIVES

Number of Pigs in Denmark

(In rural communes only).

(thousands)

Classification	1935				1934					1933		
	25 May	13 April	1 March	15 Jan.	1 Dec.	15 Oct.	1 Sept.	16 July	1 June	15 Dec.	14 Oct.	15 July
Boars for reproduction	20	20	20	19	20	20	21	21	22	23	24	25
Sows in farrow for first time . .	83	87	89	72	48	29	40	66	82	36	38	41
Other sows in farrow	172	154	166	181	190	187	180	165	166	176	206	239
Sows in milk	88	98	81	77	74	82	78	89	82	90	102	115
Sows not yet covered (and not for slaughter) . .	25	22	19	19	21	25	29	24	23	34	34	34
Sows for slaughter . . .	12	12	14	9	11	10	10	11	10	26	25	15
<i>Total of sows</i>	<i>380</i>	<i>373</i>	<i>369</i>	<i>358</i>	<i>344</i>	<i>333</i>	<i>337</i>	<i>355</i>	<i>363</i>	<i>362</i>	<i>405</i>	<i>444</i>
Sucking pigs not weaned	724	813	695	668	653	720	680	774	711	733	916	1,029
Young and adult pigs for slaughter:												
Weaned pigs under 35 kg. .	797	740	738	762	745	734	790	737	672	974	1,075	1,068
Pigs of 35 and under 60 kg. .	635	629	637	667	646	711	661	647	664	892	951	997
Fat pigs of 60 kg. and over .	500	463	508	451	621	590	503	523	595	740	825	827
<i>Total pigs</i>	<i>3,056</i>	<i>3,038</i>	<i>2,967</i>	<i>2,925</i>	<i>3,029</i>	<i>3,108</i>	<i>2,992</i>	<i>3,057</i>	<i>3,027</i>	<i>3,724</i>	<i>4,196</i>	<i>4,390</i>

The Output of Eggs and Poultry in England and Wales in 1933-34.

The agricultural census of 1925 indicated that the yield of eggs per hen then averaged 100 over the whole country on the assumption that there were on average 11 hens in every 12 adult poults. No inquiries as to the yield of eggs per bird are made in intercensal years but it appears probable that subsequent to 1925 the proportion of hens in the total numbers of adult birds rose materially, and on the assumption that in the next census year, 1930-31, there was an average of 19 hens in 20 adults, the yield per hen was then 120, an increase of 20 % compared with the census of 1925.

As regards duck eggs, the yield in 1925 was placed, after revision, at 65 eggs per adult bird, no satisfactory information being available of the proportions of male and female birds, while the 1930-31 census indicated that the yield was then equivalent to 70 per adult duck.

The following table showing the production of eggs from 1924-25 to 1933-34 is based on the assumption that the increases in the yields per bird may be spread evenly over the years between 1924-25 and 1930-31 and that yields have remained unaltered since the latter year.

Years (June to May)	Hen Eggs	Duck Eggs (millions)	Total
1924-25	1,422	71	1,493
1925-26	1,563	69	1,632
1926-27	1,732	69	1,801
1927-28	1,951	70	2,021
1928-29	2,135	67	2,202
1929-30	2,297	62	2,359
1930-31	2,564	63	2,627
1931-32	2,803	67	2,870
1932-33	3,024	68	3,092
1933-34	3,154	64	3,218

The table shows that expansion has been uninterrupted throughout the period, and the total production, of 3,218 million eggs in 1933-34 was well over twice as much as that of 1924-25. The increase between 1932-33 and 1933-34 was 126 millions or 4 %, and it is worth noting that this represented the smallest expansion in any of the years covered by the table.

The figures include eggs used for hatching, which are estimated to have been approximately 85 million hen eggs and 4 million duck eggs in 1933-34.

The following table gives estimates of the annual output of poultry for food in England and Wales. These are based on the special census returns collected from occupiers in 1925 and 1931, varied according to changes in numbers of birds as shown by the annual June returns. The figures are subject to a wider margin of error than those relating to eggs as the output of birds for food may vary very widely from holding to holding, irrespective of the numbers of birds on hand in June.

Years (June to May)	Fowls	Ducks (thousands)	Geese	Trakeys
1924-25	15,000	2,200	490	500
1925-26	16,000	2,400	540	520
1926-27	17,000	2,600	590	530
1927-28	18,000	2,600	600	480
1928-29	19,000	2,400	570	470
1929-30	20,000	2,000	560	560
1930-31	22,000	2,200	550	530
1931-32	24,000	2,200	500	420
1932-33	27,000	2,600	520	440
1933-34	30,000	2,700	610	650

During the past ten years the output of fowls for food has doubled and the numbers of ducks, geese and turkeys for food produced in 1933-34 were in each case the largest of the period covered by the table, the figure for turkeys being particularly large in relation to earlier years.

The foregoing estimates relate only to production on agricultural holdings exceeding 1 acre. The inquiries made in 1930 indicate that, to cover other holdings, private gardens, etc., it is necessary to add about 650 million eggs and 6 million birds for food.

Live Stock in Northern Ireland.

With the object of facilitating the operation of its marketing schemes, the Ministry of Agriculture made an enquiry into the numbers of live stock on agricultural holdings on 1 April 1935. Returns were received from about 5,000 farm-

ers out of a total number of over 100,000 and estimates of the total numbers of live stock was calculated on this sample. These estimates are given in the following table together with the results of the complete enumerations made on 1 June 1934 and 1 December 1934.

Classification	Estimate 1 April 1935	Census 1 Dec. 1934	Census 1 June 1934	% change as compared with	
				1 December 1934	1 June 1934
Milch cows	*) 245,000	251,620	251,409	— 2.6	— 2.5
Heifers in calf	45,000	34,730	31,946	+ 29.6	+ 40.9
Other cattle	470,000	463,870	485,181	+ 1.3	— 3.1
<i>Total cattle</i>	<i>760,000</i>	<i>750,220</i>	<i>768,536</i>	<i>+ 1.3</i>	<i>— 1.1</i>
Ewes	360,000	399,338	349,866	— 9.9	+ 2.9
Other sheep	382,000	129,774	411,444	+ 194.4	— 7.2
<i>Total sheep</i>	<i>742,000</i>	<i>529,112</i>	<i>761,310</i>	<i>+ 40.2</i>	<i>— 2.5</i>
Sows	45,000	41,902	39,837	+ 7.4	+ 13.0
Other pigs	385,000	359,199	340,511	+ 7.2	+ 13.1
<i>Total pigs</i>	<i>430,000</i>	<i>401,101</i>	<i>380,348</i>	<i>+ 7.2</i>	<i>+ 13.1</i>

*) Including helpers in milk.

The numbers of cattle and sheep at 1 April 1935 are not, of course, strictly comparable with the numbers at 1 June and 1 December 1934, as at 1 April the breeding season is not ended. The number of pigs, however, at each of the three dates may be regarded as comparable, and the steady increase in numbers is due to the operation of the Pigs Marketing Scheme.

The Live Stock Situation in Yugoslavia.

The following table gives figures of the numbers of live stock according to the official enquiry made at the end of January of the years following those indicated in the table.

Year	Cattle	Horses	Asses	Mules	Sheep	Goats	Pigs	Buffaloes
1934	3,989,941	1,205,865	120,034	17,678	8,867,685	1,881,126	2,791,592	38,929
1933	3,876,309	1,186,984	117,496	17,236	8,600,418	1,871,158	2,656,345	36,634
1932	3,812,208	1,156,997	114,719	16,449	8,510,441	1,871,618	2,863,177	38,704
1931	3,871,556	1,168,768	115,270	16,359	8,425,634	1,928,224	3,133,164	40,563
1930	3,812,172	1,161,235	106,944	15,843	7,953,139	1,731,430	2,923,862	37,487
1929	3,728,038	1,140,343	106,117	15,469	7,735,957	1,803,574	2,674,800	36,846
1928	3,654,261	1,109,246	103,528	15,165	7,722,247	1,750,006	2,662,790	32,116
1927	3,729,343	1,120,310	97,509	14,865	7,735,915	1,738,958	2,769,848	30,980
1926	3,706,019	1,116,858	96,298	14,551	7,932,845	1,721,263	2,806,182	31,519
1925	3,768,135	1,106,142	95,236	14,504	7,906,808	1,810,669	2,802,355	27,431
1924	3,784,267	1,053,875	89,779	14,190	7,618,708	1,718,368	2,517,955	28,626
1923	3,869,985	1,062,893	94,720	14,849	7,639,257	1,730,204	2,496,723	31,717
1922	4,058,419	1,043,528	86,036	15,002	8,461,504	1,801,409	2,887,020	31,938
1920 *)	4,951,339	1,062,343	84,182	18,091	7,002,124	1,552,555	3,349,504	51,470

Census 31 January 1921.

The increases in the numbers of nearly all kinds of animals during recent years is to be ascribed chiefly to the natural increase, assisted by plentiful harvests of fodder crops and by the decline in the prices of these products. Further, the favourable weather conditions and the legislation enforced with the object of fighting the epizootic epidemics introduced at the end of 1932 by live stock which were in transit have contributed appreciably to the improvement in the health of animals. According to official information, no epizootic diseases have been recorded in any part of the country since the beginning of 1934.

The slight fall in domestic consumption and, more particularly, the great drop in exports of live animals and meat during recent years have also reinforced the general upward tendency in the numbers of animals.

Numbers of animals slaughtered in public abattoirs.

Classes of slaughtered livestock	1934	1933	1932	1931	1930	1929	1928
SMALL ANIMALS	1,298,925	1,209,403	1,169,894	1,248,878	1,479,110	1,474,416	1,689,614
Lambs	696,286	663,213	616,214	687,572	752,845	714,632	866,750
Ewes	319,043	287,386	326,799	294,322	348,593	436,330	442,078
Total Sheep	1,015,329	950,599	943,013	981,894	1,101,438	1,150,962	1,308,828
Female goats	233,644	209,129	167,026	205,246	276,181	230,299	276,224
Male goats	49,952	49,675	59,855	61,738	101,491	93,155	104,562
Total goats	283,596	258,804	226,881	266,984	377,672	323,454	380,786
CATTLE	688,745	705,537	689,724	654,986	615,220	750,372	784,403
Calves	334,338	338,733	340,800	353,686	285,161	346,087	374,359
Oxen	128,733	122,006	111,265	104,086	116,255	129,886	153,066
Cowher	116,512	124,454	110,885	102,468	123,333	157,869	138,474
Heifers	58,980	62,370	59,766	49,872	48,587	63,203	63,441
Steers	38,802	43,448	46,679	29,356	30,120	39,931	41,077
Bulls	11,380	14,526	20,329	15,518	11,764	13,396	13,986
PIGS	518,995	524,068	572,797	757,491	641,835	575,515	646,217
Fat pigs	442,504	462,031	425,642	618,466	560,854	520,103	554,636
Thin pigs	6,147	4,905	50,261	16,738	3,919	3,049	—
Young pigs	69,850	56,935	93,097	122,287	77,062	49,314	91,581
Sucking pigs	494	197	3,797	—	—	3,049	—
BUFFALOES	1,946	2,521	1,106	2,217	2,631	1,039	1,188
Young buffalo	1,142	1,317	581	1,210	1,274	618	465
Buffaloes	804	1,204	525	1,007	1,357	421	723
HORSES	857	750	564	1,009	1,722	2,237	3,467
Horses	843	733	534	1,009	1,722	2,237	3,397
Colts	14	17	30	—	—	—	70
GENERAL TOTALS	2,509,468	2,442,279	2,434,085	2,664,777	2,740,518	2,803,579	3,124,889
Cattle diseased or suspected of disease	5,627	4,454	4,359	4,733	5,931	4,880	6,267

The preceding table, the totals in which cover only part of the live stock slaughtered for consumption in the country, will convey an idea of the trend of internal consumption during recent years. Statistics of most of the animals slaughtered in the country (see slaughtering in private slaughter-houses and by rearers themselves) are not available. The comparative stability of internal consumption in spite of the great fall in the purchasing power of the urban

classes who are the chief consumers is attributable to the appreciable decline in the prices of live stock and live stock products.

Exports of live animals and meat, which occupy a very important place in the economic life of the country, amounting in value to 50 % of all exports, have declined materially in recent years.

Exports of animals and meat.

Year	Cattle	Sheep and goats	Pigs	Veal and beef	Pig meat
	Heads	Heads	Heads	1000 lb.	1000 lb.
1934	76,815	655,303	141,446	3,787	3,197
1933	70,660	617,217	208,140	5,696	3,661
1932	47,225	480,087	273,753	4,992	5,964
1931	108,985	602,279	273,459	7,993	4,171
1930	136,679	717,110	248,393	6,710	6,446
1929	110,421	850,681	224,901	8,933	11,016
1928	113,488	1,038,678	221,142	8,702	9,481

The heavy decrease in 1932 in the exports of cattle, 90 % of which go to Italy, was the result of the increase in import duties in the latter country and of the granting of preferential treatment to Hungarian cattle. Exports in 1933 and 1934 rose appreciably above those of 1932 only after a new commercial agreement had been made between Yugoslavia and Italy but they remained below those of the preceding years.

The fall in the exports of beef and veal since 1932 was mainly the result of the very high tariffs imposed in Austria and Yugoslavia.

The fluctuations in the exports of sheep and goats are the effects of the demand from Greece. The contraction in consumption in this country, the steps taken by the Government to defend the drachma and the contingent of imports have caused a continuous decline in Yugoslav exports of small animals. For these the lowest point was touched in 1932. A partial recovery occurred in 1933 and 1934, the outcome of a commercial treaty based on compensation between Greece and Yugoslavia.

The great decrease in the exports of pigs and pig-meat which is noticeable during the last two years is connected with the policy for the protection of the internal market and the development of the national pig industry which are being pursued by the two chief buyers of Yugoslav pigs, Austria and Czechoslovakia.

G. S.

Current information on livestock and derivatives.

Belgium: Animals are in a good state of health.

Estonia: Feeding conditions for milk cows were bad during May. The supplies of dry fodder were drawn upon heavily and the growth of grass was held up by the bad weather.

Irish Free State: Supplies of feeding stuffs are adequate for all requirements. Milk yields were above average for the season.

France: Despite the abnormal and at times severe, cold in May, condition of stock remained fairly satisfactory in most districts; in the Centre only it was rather unsatisfactory or even at times poor. The cold and generally bad weather reduced milk production.

Great Britain and Northern Ireland: Most pastures are fully stocked. Cattle have done fairly well on the whole, but in upland districts and on thin soils shortage of keep has retarded their progress.

Yields of milk were affected in some cases by the cold weather and were maintained with some difficulty.

Sheep and lambs are generally healthy and lambing among the hill flocks has been satisfactory.

Netherlands: Growth of grass has not been favoured by the cold weather but the feed situation for milch cows has been satisfactory. In comparison with last year milk production was larger in May in Friesland, Drenthe, Overijssel, Geldern and South Holland. The greatest increase was not, however, above 5 %. Production of milk decreased somewhat in North Brabant and Zeeland (5 %) and Limburg (3 %). In the other districts it was practically normal.

Switzerland: At the beginning of June animals had not been taken to the higher districts owing to the delay in vegetation.

Milk deliveries in April were 30 % below those of April last year.

United States: According to a report referring to 1 May, weather and feed conditions during April in the important early lambing areas, as a whole, were above average and the development of the early lambs was correspondingly favourable. There continued, however, to be considerable variation in conditions among the different areas, ranging from exceptionally favourable in California and Arizona to below average in the Pacific Northwest and very poor in Texas. In the early native sheep States a deficiency of sunshine during April prevented the best development of the lambs.

Milk production per cow, when compared with production last year, continues to increase gradually in most States outside the area affected by last year's drought. In the country as a whole crop correspondents were securing between 2 and 3 % more milk per cow on 1 May than on that date last year but less than on 1 May in any of the preceding nine years. Total milk production, owing to the reduced number of milk cows, appears to have been about 2 % less than on 1 May last year.

Argentina (Telegram of 22 June): Animals are in good health but there are complaints of a shortage of grass on pastures.

Palestine: Pastures at the beginning of May were still green and in excellent condition. Flocks have come up to the hills from the Ghor areas (River Jordan valley).

French Morocco: The live stock position continued to be satisfactory at the end of May. Feed is still adequate as a result of the stubble and the cereal crops which have been cut green for stock.

Union of South Africa: It was comparatively hot and dry during the earlier part of April, but towards the end of April, soaking rains fell practically throughout the Cape Province, Natal and Orange Free State.

Stock and grazing were in April on the whole in good condition; the lambing season is very promising and prospects for a good wool clip were favourable. In the Orange Free State the condition of the sheep had already improved considerably and winter grazing was expected to be abundant this year. In some districts, however, the grass was very rank, and there were still complaints of internal parasites in some districts of the Orange Free State and Bechuanaland. Good rains also fell in parts of the Transvaal, but in some of the lowveld districts it is still very dry and farmers have been compelled to trek with their stock. The same applies also to some of the north-western districts of the Cape Province.

LATEST INFORMATION

Production of wheat and barley in Chosen and Egypt.

Area	1935	1934	Average 1929 to 1933	% 1935 1934 = 100	Average = 100
<i>Wheat</i>					
	Thousand acres				
Chosen . . . . .	...	789	824	...	...
Egypt	1,463	1,442	1,595	101.5	91.7
<i>Barley</i>					
Chosen . . . . .	...	2,179	2,403	...	...
Egypt	290	284	342	101.9	84.8
<i>Production</i>					
<i>Wheat</i>					
	Thousand centals				
Chosen	5,374	5,850	5,361	91.9	100.2
Egypt	25,882	22,366	26,831	115.7	96.5
<i>Barley</i>					
Chosen	25,398	23,361	20,455	108.7	124.2
Egypt	5,916	4,336	5,200	113.4	94.5
<i>Wheat</i>					
	Thousand bushels				
Chosen	8,956	9,751	8,935	91.9	100.2
Egypt	43,136	37,276	44,718	115.7	96.5
<i>Barley</i>					
Chosen	52,913	48,670	42,616	108.7	124.2
Egypt	10,243	9,033	10,834	113.4	94.5

TRADE

COUNTRIES	APRIL				NINE MONTHS (August 1-April 30)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1935	1934	1935	1934	1934-35	1933-34	1934-35	1933-34	1933-34	1933-34
Wheat. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Bulgaria	0	101	0	0	0	2,207	0	0	2,242	0
Hungary	761	1,572	0	0	5,262	13,880	0	0	15,496	0
Lithuania	225	0	0	0	518	0	0	0	0	0
Poland	31	49	0	0	421	344	9	507	1,596	507
Romania	143	4	0	0	143	141	4	9	141	11
Yugoslavia	132	46	0	0	2,299	309	2	0	553	0
U. S. S. R.	...	...	...	...	1,179	15,781	...	...	19,271	...
Canada	3,016	2,141	0	0	70,041	71,701	0	7	101,960	7
United States	18	2,145	1,623	575	1,373	10,157	12,622	5,183	11,995	6,757
Argentina	8,320	5,930	...	...	81,992	57,188	...	...	84,074	...
Chile	60	110	115	0	639	231	170	765	582	765
Syria and Lebanon	0	2	4	15	216	406	15	165	423	198
Algeria	...	...	...	...	4,974	4,866	223	231	6,493	340
French Morocco	...	...	...	...	2,423	3,435	0	0	5,082	0
Tunisia	168	11	7	77	1,155	593	176	1,098	1,124	1,122
Australia	4,919	1,936	0	0	36,335	27,117	0	0	36,090	0
New Zealand	...	...	...	...	0	181	7	82	181	119
<i>Importing Countries:</i>										
Germany	0	527	364	1,060	117	10,752	6,400	12,192	12,516	17,163
Austria	0	0	522	549	0	0	3,155	3,181	0	4,866
Belgium	95	53	1,429	2,335	1,541	981	20,141	20,690	1,459	26,226
Denmark	0	0	657	386	31	9	9,072	5,029	9	6,764
Spain	0	0	0	0	0	0	0	0	0	0
Estonia	18	0	0	0	93	0	0	0	0	0
Irish Free State	0	0	681	999	0	0	6,839	7,465	0	10,280
Finland	0	0	97	71	0	0	809	756	0	1,098
France	1,250	0	1,056	992	14,637	1,327	11,596	13,241	1,905	16,493
Gr. Brit. and N. Irel.	35	139	9,057	10,395	569	474	82,109	89,680	754	120,064
Greece	0	0	787	531	0	0	5,130	5,057	0	6,285
Italy	0	0	963	1,122	0	0	7,496	7,441	0	9,908
Latvia	...	...	...	...	60	0	0	0	0	0
Norway	0	...	216	265	0	0	2,698	2,500	0	3,761
Netherlands	97	165	844	919	121	866	8,715	10,426	1,303	13,649
Portugal	...	...	33	35	...	...	141	282	...	384
Sweden	430	0	0	106	853	2	739	880	375	1,089
Switzerland	0	0	816	741	2	4	7,452	7,822	7	10,558
Czechoslovakia	0	0	106	0	2	2	578	86	4	88
Ceylon	...	...	...	...	...	...	15	7	...	9
China	11	9	2,227	1,235	...	104	7,015	8,153	185	11,200
India	...	2	0	0	236	35	101	99	44	165
Japan	...	...	1,120	1,021	...	...	8,360	7,491	...	9,811
Egypt	...	...	...	...	51	0	1,063	2	9	7
Union of South Afr.	...	...	...	...	2	0	518	20	0	33
Totals	19,731	14,942	22,804	23,429	227,543	223,107	203,370	210,547	305,880	279,727
Rye. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Germany	0	276	483	44	51	6,184	4,372	2,132	6,945	2,196
Bulgaria	0	2	0	0	0	18	0	0	18	0
Estonia	0	0	0	0	494	0	22	0	0	0
Hungary	73	359	0	0	624	2,974	0	0	3,455	0
Latvia	...	...	...	...	1,814	0	0	0	0	0
Lithuania	337	0	0	0	1,102	49	0	0	49	0
Poland	1,250	983	0	0	9,096	8,031	0	229	10,479	229
Romania	0	0	0	0	0	0	0	0	0	0
Sweden	68	0	2	2	1,755	0	18	24	42	31
U. S. S. R.	...	...	...	...	547	1,656	...	...	3,397	...
Canada	0	0	0	0	395	1,424	11	0	1,444	0
Argentina	840	117	...	...	5,126	1,651	...	...	2,178	...
Algeria	...	...	...	...	24	15	0	0	22	0
<i>Importing Countries:</i>										
Austria	0	0	181	0	0	1,574	4	0	172	0
Belgium	0	0	110	454	9	11	1,221	4,255	11	4,804
Denmark	0	0	478	355	2	0	3,139	4,932	0	5,895
Finland	0	0	15	103	0	0	110	785	0	1,173
France	0	0	0	0	2	0	31	71	0	71
Italy	0	0	42	11	0	0	132	79	0	126
Norway	0	0	139	278	0	0	1,795	2,235	0	3,201
Netherlands	0	0	390	564	227	7	1,418	3,794	7	5,110
Switzerland	0	0	11	9	0	0	110	106	0	137
Czechoslovakia	0	0	2	2	4	15	13	15	18	20
United States	0	0	375	487	0	9	3,990	5,013	9	7,055
Total	2,568	1,737	2,226	2,314	21,272	22,044	17,956	23,674	28,074	30,220

1) 2) 3) See notes page 482.

COUNTRIES	APRIL				NINE MONTHS (August 1-April 30)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1935	1934	1935	1934	1934-35	1933-34	1934-35	1933-34	1933-34	1933-34
Wheat flour. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Germany	15	481	0	2	578	4,259	71	49	5,578	55
Bulgaria	0	2	0	0	0	84	0	0	93	0
Spain	0	0	0	0	0	29	0	0	31	0
Hungary	262	340	137	66	3,497	3,203	1,235	668	4,149	937
Italy	66	104	0	0	575	1,153	0	0	1,466	0
Lithuania	218	280	4	15	3,148	2,837	82	275	3,849	320
Poland	0	0	0	0	0	22	0	0	22	0
Romania	49	31	0	0	335	207	0	0	282	0
Yugoslavia	0	0	0	0	0	7	0	0	7	0
Canada	2	2	0	0	29	44	0	0	55	0
United States	542	668	20	9	6,942	8,082	284	84	10,690	176
Argentina	522	796	0	0	6,063	6,065	2	0	7,584	2
Chile	172	229	—	—	1,651	1,850	—	—	2,425	—
India	0	2	2	0	42	13	44	37	22	55
Japan	20	15	0	0	218	212	2	2	260	2
Algeria	734	377	4	0	5,467	4,339	20	20	5,569	22
French Morocco . . . . .	...	...	...	...	648	540	46	51	897	101
Tunisia	29	13	2	62	29	49	60	187	223	249
Australia	1,202	840	0	0	10,805	8,285	2	0	10,922	0
<i>Importing Countries:</i>										
Austria	0	0	68	97	2	0	487	624	0	992
Belgium	0	2	9	22	31	33	134	256	42	287
Denmark	4	2	44	31	13	9	379	441	13	564
Estonia	0	0	0	0	0	0	0	0	0	0
Irish Free State	0	0	11	37	0	0	461	941	0	1,091
Finland	0	0	68	93	0	0	624	809	0	1,146
Gr. Brit. and N. Irel.	278	216	692	970	2,542	2,401	6,817	8,662	3,245	11,674
Greece	0	0	2	0	0	2	26	11	2	13
Norway	0	0	55	55	2	2	717	653	4	930
Netherlands	4	0	64	64	9	4	661	692	7	880
Portugal	—	—	31	13	—	—	104	104	—	143
Sweden	0	0	0	0	0	0	2	4	0	4
Czechoslovakia	0	0	2	0	4	7	15	18	7	22
Ceylon	—	—	20	46	—	—	315	306	—	386
China	0	0	84	90	57	86	1,228	1,124	165	1,314
Indo-China	—	—	104	77	—	—	256	227	—	337
Java and Madura	—	—	—	93	—	—	919	882	—	1,087
Syria and Lebanon	7	2	4	77	51	68	75	644	77	888
Egypt . . . . .	...	...	...	...	0	0	55	68	0	99
Union of South Afr. . . . .	...	...	...	...	0	0	7	4	2	9
New Zealand . . . . .	...	...	...	...	2	2	141	134	2	209
Totals	4,126	4,402	1,427	1,842	43,247	44,042	15,271	17,985	57,739	24,023

Barley. — Thousand centals (1 cental = 100 lb.).

<i>Exporting Countries:</i>										
Bulgaria	0	99	0	0	0	507	0	0	522	0
Spain	0	0	0	0	0	44	0	0	44	0
Hungary	2	86	0	0	84	1,045	24	0	1,093	0
Lithuania	77	0	0	0	154	0	0	0	0	0
Poland	399	219	0	0	6,532	3,051	0	0	3,538	0
Romania	150	1,036	0	0	3,680	13,056	0	4	14,654	4
Czechoslovakia	46	57	0	0	1,016	1,076	2	2	1,116	2
Yugoslavia	29	2	0	0	522	163	0	0	176	0
U. S. S. R. . . . .	...	...	—	—	2,705	9,493	—	—	10,796	—
Canada	150	2	0	0	5,571	485	0	0	820	0
United States	42	194	752	2	1,803	2,231	4,467	13	2,531	152
Argentina	313	990	—	—	7,853	8,486	—	—	11,605	—
Chile	86	137	0	0	1,153	944	0	0	2,006	0
India	62	0	0	2	377	2	9	86	2	95
Algeria . . . . .	...	...	...	...	1,113	948	591	441	1,144	496
Egypt . . . . .	...	...	...	...	0	123	13	0	139	0
French Morocco . . . . .	...	...	...	...	4,881	1,812	0	0	2,628	0
Australia	82	181	0	0	1,299	1,191	0	0	1,407	0
<i>Importing Countries:</i>										
Germany	0	0	613	575	0	2	9,652	5,562	2	7,648
Austria	0	0	115	271	0	0	1,367	1,806	0	2,588
Belgium	26	15	836	829	359	456	7,381	7,624	655	8,962
Denmark	15	62	64	93	1,398	860	767	1,032	977	1,314
Irish Free State	0	0	2	4	4	11	165	73	11	212
France	0	0	313	117	2	0	3,285	3,195	0	3,915
Gr. Brit. and N. Irel.	2	11	717	1,142	9	20	11,557	17,320	26	20,522
Greece	0	0	31	0	0	0	49	4	0	4
Italy	0	0	295	168	0	0	1,499	851	0	1,124
Norway	0	0	2	4	2	0	143	282	0	293
Netherlands	9	7	556	1,268	190	24	4,367	9,475	26	11,543
Switzerland	0	0	168	84	0	0	2,205	1,700	0	2,412
Syria and Lebanon	7	18	0	0	112	77	2,37	209	79	216
Tunisia	2	2	4	93	26	62	1,005	556	84	602
Totals	1,499	3,117	4,468	4,652	40,836	46,169	49,185	50,235	56,081	61,904

COUNTRIES	APRIL				NINE MONTHS (August 1-April 30)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1935	1934	1935	1934	1934-35	1933-34	1934-35	1933-34	1933-34	1933-34
Oats. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Irish Free State . . .	0	0	0	0	0	20	0	0	20	0
Hungary	0	4	0	0	0	752	0	0	761	0
Lithuania	51	0	0	0	176	2	0	0	2	0
Poland	71	22	0	0	796	95	0	0	304	0
Romania	0	0	0	0	0	505	0	0	505	0
Czechoslovakia . . .	0	18	0	0	2	642	2	0	741	0
Yugoslavia	4	0	0	0	234	40	0	0	112	0
Canada	119	121	0	0	3,558	1,254	0	2	2,070	2
United States	4	4	694	2	31	112	4,321	20	123	71
Argentina	417	507	—	—	11,914	5,066	—	—	7,053	—
Chile	88	238	0	0	952	778	0	0	1,530	0
Tunisia	11	2	0	13	346	20	0	18	86	22
Australia	20	4	0	0	238	22	2	0	33	2
<i>Importing Countries:</i>										
Germany	0	20	747	4	13	1,907	3,876	88	1,931	97
Austria	0	0	24	13	0	0	108	152	0	450
Belgium	0	0	29	33	0	0	134	88	0	390
Denmark	2	0	42	20	657	26	717	278	26	373
Estonia	0	0	0	0	15	0	0	0	0	0
Finland	0	0	0	26	2	9	11	414	9	549
France	2	77	31	11	31	82	309	196	179	238
Gr. Brit. and N. Irel.	2	2	176	183	15	15	2,222	4,204	20	4,894
Italy	0	0	690	534	0	0	4,019	2,002	0	2,811
Latvia . . . . .	...	...	...	...	1)	0	1)	0	2	2
Norway	0	0	2	0	0	2	4	2	4	2
Netherlands	2	0	64	35	9	20	538	809	20	1,142
Sweden	2	2	0	26	37	9	24	807	9	915
Switzerland	0	0	465	509	0	0	3,505	3,655	0	4,780
Algeria . . . . .	...	...	...	...	1)	119	1)	86	112	282
Totals	795	1,021	2,964	1,409	19,145	11,429	19,898	12,849	15,602	17,022
Maize. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Bulgaria	9	399	0	0	399	1,199	0	0	2,564	0
Hungary	26	22	90	0	112	780	93	0	1,056	0
Romania	906	2,187	0	—	5,082	6,704	0	0	10,115	2
Yugoslavia	1,153	935	0	0	8,426	6,096	0	0	11,810	2
United States	9	84	811	7	212	1,279	5,653	60	2,401	763
Argentina	-12,924	11,636	—	—	50,005	59,611	—	—	127,357	—
Java and Madura . . .	163	53	—	—	1,091	882	—	—	924	—
Indo-China . . . . .	...	...	—	—	4,425	2,291	—	—	8,439	—
Syria and Lebanon . .	0	0	4	9	0	0	7	31	0	66
Egypt . . . . .	...	...	...	...	1)	0	2	15	7	20
Union of South Afr.	732	0	...	...	4,910	0	0	0	165	3,693
<i>Importing Countries:</i>										
Germany	0	0	747	472	0	0	5,344	3,139	0	7,452
Austria	0	0	1,257	1,188	0	2	5,800	5,470	2	10,448
Belgium	104	20	783	747	406	328	7,057	7,253	822	16,824
Denmark	0	0	143	106	0	0	1,874	1,953	0	4,586
Spain	0	0	7	0	0	0	423	741	0	1,916
Irish Free State . . .	0	0	152	573	0	0	2,416	2,630	0	6,543
Finland	0	0	37	130	0	0	240	966	0	1,312
France	2	2	888	864	2	18	9,248	7,888	22	13,607
Gr. Brit. and N. Irel.	159	101	1,925	2,912	1,012	805	28,550	32,668	2,116	66,597
Greece	0	0	119	7	0	0	485	26	0	37
Italy	0	0	304	181	2	2	1,001	1,098	2	3,874
Norway	0	0	139	207	0	0	970	1,579	0	3,084
Netherlands	0	0	1,288	1,951	0	9	10,080	12,028	13	22,011
Poland	0	0	0	20	0	0	0	53	0	60
Portugal	—	—	49	128	—	—	401	734	—	1,669
Sweden	0	0	35	271	0	0	262	2,390	0	3,106
Switzerland	0	0	126	106	0	0	899	959	0	1,792
Czechoslovakia . . .	0	0	388	432	0	0	1,407	2,019	0	5,150
Canada	2	0	15	212	2	0	1,953	1,784	2	4,090
Japan	—	—	4	0	—	—	4	2	—	2
Tunisia	0	0	0	20	0	0	55	93	4	101
Totals	16,189	15,439	9,311	10,543	76,086	80,008	84,237	85,736	171,344	175,546

1) 2) See notes page 482.

COUNTRIES	APRIL				FOUR MONTHS (January 1-April 30)				TWELVE MONTHS (January 1-Dec. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1935	1934	1935	1934	1935	1934	1935	1934	1934	1934
Rice. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Spain	66	24	0	0	344	130	0	0	1,010	0
Italy	240	238	4	4	1,142	1,129	31	11	3,598	44
United States	146	64	22	51	298	410	390	128	917	558
Brazil	...	...	—	—	170	68	—	—	734	—
India	3,371	3,697	157	791	17,710	13,287	1,532	2,198	31,244	8,858
Indo-China	...	...	—	—	12,472	7,145	—	—	28,462	—
Siam	2,676	2,948	—	—	12,857	13,021	—	—	43,202	—
Egypt	...	...	...	...	260	699	13	2	1,508	9
<i>Importing Countries:</i>										
Germany	29	62	209	423	119	134	1,263	1,510	745	6,341
Austria	0	0	51	53	0	0	223	209	0	633
Belgium	4	7	104	165	15	42	287	445	97	1,446
Denmark	0	0	2	7	0	0	42	40	0	137
Estonia	—	—	0	2	—	—	4	4	—	15
Irish Free State	0	0	4	7	0	0	15	18	0	57
France	79	71	646	1,371	291	300	3,613	3,962	661	14,171
Gr. Brit. and N. Irel.	13	15	439	364	62	53	827	891	174	2,862
Greece	0	0	53	33	0	0	194	159	0	313
Hungary	0	0	20	15	0	0	119	163	0	448
Latvia	...	...	...	...	...	...	...	...	...	...
Lithuania	0	0	0	0	0	0	2	4	0	15
Norway	0	0	13	7	0	0	33	33	0	106
Netherlands	104	170	366	368	622	467	688	785	2,013	3,629
Poland	2	4	11	163	20	33	37	165	157	974
Portugal	—	—	33	51	—	—	77	190	—	575
Sweden	—	—	11	0	—	—	40	2	—	223
Switzerland	0	0	44	31	0	0	154	128	0	397
Czechoslovakia	0	0	97	99	0	0	287	223	0	1,497
Yugoslavia	0	0	35	29	0	0	134	121	0	439
Canada	0	0	75	46	—	—	150	214	4	732
Chile	—	—	13	22	—	—	68	86	—	340
Ceylon	0	0	957	820	0	2	4,156	3,664	4	10,977
China	20	31	5,664	2,383	51	90	15,190	5,699	150	17,000
Java and Madura	0	7	66	7	2	35	2,416	53	132	1,356
Japan	201	218	0	11	386	624	77	53	1,457	152
Syria and Lebanon	0	0	37	53	0	0	128	152	0	428
Algeria	...	...	...	...	...	...	...	...	...	...
Tunisia	0	0	4	13	0	2	60	104	9	355
Union of South Afr.	...	...	...	...	...	...	...	...	...	...
Australia	20	22	9	4	66	60	22	31	244	49
New Zealand	...	...	...	...	...	...	...	...	...	...
Totals	6,971	7,578	9,146	7,393	46,889	37,731	32,437	21,625	116,522	76,462
Linseed. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
Lithuania	20	2	0	0	75	44	0	0	141	0
Argentina	2,458	1,874	—	—	16,361	14,070	—	—	30,300	—
India	134	747	0	0	348	1,797	0	0	6,175	0
Tunisia	0	0	0	0	0	0	0	0	0	2
<i>Importing Countries:</i>										
Germany	0	0	902	769	0	0	1,907	3,102	2	6,986
Belgium	11	4	198	174	62	40	1,080	858	68	1,790
Denmark	—	—	104	22	—	—	227	101	—	359
Spain	—	—	46	49	—	—	143	112	—	366
Estonia	0	0	2	0	2	2	2	4	15	4
Finland	0	0	15	20	0	0	35	49	0	104
France	0	0	483	600	2	2	2,143	2,352	7	5,243
Gr. Brit. and N. Irel.	0	0	386	432	2	0	1,947	1,936	15	4,123
Greece	0	0	11	9	0	0	22	31	0	112
Hungary	2	0	0	0	4	2	0	0	13	0
Italy	0	0	128	112	0	0	505	441	0	1,422
Latvia	...	...	...	...	...	...	...	...	...	...
Norway	0	0	77	15	35	26	24	24	79	86
Netherlands	2	7	1,025	556	53	42	4,290	2,498	77	7,108
Poland	0	0	0	0	0	0	0	2	0	170
Sweden	—	—	121	190	—	—	306	328	—	849
Czechoslovakia	0	0	168	112	0	0	209	229	0	556
Yugoslavia	0	0	22	22	0	0	64	77	0	139
Canada	0	0	9	0	4	2	82	44	4	443
United States	—	—	650	642	—	—	3,303	3,018	—	7,934
Japan	0	2	18	53	2	2	126	196	2	434
Australia	0	0	13	123	0	0	243	163	0	560
Totals	2,627	2,636	4,378	3,900	16,950	16,029	16,867	15,728	36,898	39,127

1) 2) See notes page 482.

COUNTRIES	APRIL				FOUR MONTHS (January 1-April 30)				TWELVE MONTHS (January 1-Dec. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1934	1935	1934	1935	1934	1935	1934	1934	1934
Butter. — (Thousand lb.).										
<i>Exporting Countries:</i>										
Austria	212	29	0	2	1,118	1,570	4	11	7,053	157
Denmark	24,372	29,366	7	0	94,978	104,980	31	4	330,311	20
Estonia	1,724	1,345	0	0	4,782	4,142	0	0	22,306	0
Irish Free State	1,753	2,019	2	9	3,419	4,352	4	55	56,886	84
Finland	2,432	2,410	0	0	8,402	7,802	0	0	24,467	13
Hungary	77	368	0	0	1,199	2,855	0	0	8,790	0
Latvia . . . . .	...	...	...	...	5,747	5,642	...	...	34,615	0
Lithuania	1,548	1,098	0	0	4,169	3,298	0	0	21,321	0
Norway	0	0	0	0	247	342	0	2	547	2
Netherlands	10,926	8,481	0	53	27,591	22,425	218	104	81,320	1,173
Poland	31	300	0	0	617	994	0	0	9,782	9
Sweden	3,406	3,534	0	0	14,771	16,072	0	2	51,152	4
U. S. S. R. . . . .	...	...	...	...	...	...	...	...	83,562	...
Argentina	1,519	957	...	...	8,984	7,639	...	...	18,347	...
India	11	11	62	46	66	66	254	192	209	642
Syria and Lebanon	37	9	24	60	101	37	128	269	293	809
Australia	22,717	20,459	0	0	130,671	100,910	2	0	246,784	2
New Zealand	16,096	27,873	...	...	119,727	121,782	...	...	292,830	...
<i>Importing Countries:</i>										
Germany	0	0	14,127	7,923	2	4	59,307	32,110	9	136,165
Belgium	4	7	602	1,261	20	33	6,865	9,493	108	20,629
Spain	4	0	4	0	7	2	62	9	15	143
France	686	443	99	1,563	2,332	2,017	412	8,367	7,297	9,603
Gr. Brit. and N. Irei.	2,937	860	99,905	82,270	9,674	5,345	362,419	376,796	12,635	1,086,713
Greece . . . . .	...	...	82	24	...	...	227	97	...	690
Italy	51	22	73	55	99	82	412	2,531	276	3,799
Switzerland	0	0	18	26	0	0	53	567	0	653
Czechoslovakia	0	0	562	126	0	22	1,030	190	22	2,229
Canada	57	13	2	717	150	88	26	2,738	428	2,873
United States	51	106	8,860	46	243	615	17,386	209	1,321	1,107
Ceylon . . . . .	...	...	77	101	...	...	298	262	...	681
Java and Madura . . . . .	...	...	913	1,135	...	...	3,759	4,275	...	10,313
Japan . . . . .	...	...	0	2	...	...	9	22	...	64
Algeria . . . . .	...	...	...	...	...	...	752	818	7	4,791
Egypt . . . . .	...	...	...	...	...	...	269	190	82	789
Tunisia	2	0	273	115	9	2	928	853	22	2,114
Totals	90,653	99,710	125,692	95,514	439,158	414,342	454,855	440,166	1,312,797	1,286,271
Cheese. — (Thousand lb.).										
<i>Exporting Countries:</i>										
Bulgaria	220	40	0	0	1,202	269	0	0	2,652	0
Denmark	930	955	2	4	4,301	4,502	9	18	13,891	73
Finland	761	717	0	0	3,069	2,000	2	7	8,523	40
Italy	5,373	4,769	994	904	18,559	18,067	3,214	2,901	55,283	10,190
Lithuania	0	128	0	0	408	624	0	0	2,200	2
Norway	234	287	22	13	937	1,175	88	57	4,418	214
Netherlands	10,346	11,246	53	66	41,339	40,312	251	306	134,892	1,455
Poland	2	161	26	73	500	500	93	205	3,926	531
Switzerland	3,422	3,269	295	412	11,956	12,161	1,102	1,839	39,143	5,353
Czechoslovakia	146	159	194	249	401	368	745	838	1,995	2,628
Yugoslavia	179	86	7	4	472	401	18	18	4,045	57
Canada	249	174	64	49	1,215	2,094	267	231	61,167	946
Australia	1,221	811	2	4	7,789	3,915	13	18	12,467	77
New Zealand	14,751	20,371	...	...	80,330	90,515	...	...	222,266	2
<i>Importing Countries:</i>										
Germany	42	55	4,603	5,146	340	714	19,579	22,844	2,114	74,488
Austria	1,270	194	185	245	2,895	1,003	534	551	3,860	1,720
Belgium	22	31	4,123	3,265	73	108	15,073	13,907	353	47,818
Spain	13	20	192	212	35	49	745	694	123	2,482
Irish Free State	22	2	4	4	95	62	26	18	514	64
France	2,209	2,044	3,199	3,082	8,920	9,323	11,830	9,376	25,973	35,173
Gr. Brit. and N. Irei.	359	406	28,790	24,097	1,795	1,750	113,111	118,320	5,968	334,718
Greece	0	157	150	20	126	606	569	46	1,144	295
Hungary	7	4	0	0	26	40	0	0	176	0
Portugal . . . . .	...	...	37	33	...	...	112	90	...	525
Sweden . . . . .	...	...	121	90	...	...	428	370	...	1,248
United States	115	139	4,456	3,675	439	496	16,334	15,157	1,512	47,532
India	0	0	82	60	0	0	399	306	2	1,135
Java and Madura . . . . .	...	...	137	143	...	...	522	514	...	1,656
Syria and Lebanon	44	22	84	84	95	40	392	428	534	1,221
Algeria . . . . .	...	...	...	...	...	...	2,886	1,117	...	11,288
Egypt . . . . .	...	...	...	...	...	...	1,616	1,493	...	6,537
Tunisia	7	13	220	280	13	42	886	1,010	86	2,959
Totals	41,944	46,260	48,042	42,214	187,383	191,191	190,857	194,448	609,470	592,427

z) See notes page 482.

COUNTRIES	APRIL				NINE MONTHS (August 1-April 30)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1935	1934	1935	1934	1934-35	1933-34	1934-35	1933-34	1933-34	1933-34
Cotton. — Thousand centals (1 cental = 100 lb.).										
<i>Exporting Countries:</i>										
United States	1,812	2,141	46	62	21,403	35,181	417	569	40,971	747
Argentina	51	31	—	—	381	201	—	—	450	—
Brazil	—	—	—	—	2,579	591	—	—	1,305	—
India	1,173	1,537	271	128	8,982	8,336	1,179	655	12,791	972
Egypt	—	—	—	—	5,915	6,715	—	—	8,927	—
<i>Importing Countries:</i>										
Germany	71	71	717	930	730	966	4,550	7,498	1,235	9,539
Austria	0	0	57	53	4	0	511	498	2	666
Belgium	68	42	161	130	545	423	1,519	1,354	553	1,768
Denmark	—	—	9	18	—	—	132	143	—	190
Spain	2	7	170	154	44	26	1,567	1,812	35	2,698
Estonia	0	0	11	7	0	0	88	66	0	88
Finland	0	0	20	18	4	0	236	190	2	249
France	77	31	414	556	518	295	3,779	6,085	423	7,101
Gr. Brit. and N. Irel.	49	51	833	1,005	536	470	8,785	11,411	606	14,266
Greece	0	0	9	7	0	0	97	108	0	163
Hungary	0	0	399	355	2	7	3,036	3,891	7	4,716
Italy	0	0	—	—	0	0	77	79	0	108
Latvia	—	—	—	—	0	0	46	42	0	53
Norway	0	0	93	73	2	7	664	747	7	988
Netherlands	0	0	123	134	7	4	1,063	1,177	4	1,519
Poland	—	—	40	37	—	—	353	375	—	498
Portugal	—	—	44	79	—	—	478	518	—	661
Sweden	—	—	66	44	0	0	450	459	0	597
Switzerland	0	0	132	150	57	66	1,204	1,442	97	1,845
Czechoslovakia . . .	4	4	37	35	0	0	236	220	0	289
Yugoslavia	—	—	88	95	—	—	1,003	1,129	—	1,506
Canada	22	26	154	346	348	688	1,100	2,174	847	2,835
China	104	29	1,420	1,823	448	201	13,735	11,656	384	17,163
Japan	—	—	—	—	1	4	2	2	2	11
Algeria	—	—	—	—	—	—	—	—	—	—
Totals	3,433	3,970	5,351	6,292	42,511	54,179	46,673	54,684	68,648	71,745

Wool. = (Thousand lb.).

COUNTRIES	APRIL				NINE MONTHS (August 1-April 30)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS	IMPORTS	EXPORTS	IMPORTS	EXPORTS	IMPORTS	EXPORTS	IMPORTS	EXPORTS	IMPORTS
	1935	1934	1935	1934	1934-35	1933-34	1934-35	1933-34	1933-34	1933-34
Wool. = (Thousand lb.).										
<i>Exporting Countries:</i>										
Irish Free State . . .	1,239	692	46	29	8,190	13,678	560	395	16,810	697
Hungary	0	4	454	152	1,329	979	2,685	1,517	6,270	2,286
Argentina	31,603	23,914	—	—	193,432	218,322	—	—	260,459	—
Chile	3,327	1,550	—	—	19,321	12,584	—	—	15,959	—
India	1,479	2,608	33	0	16,572	24,824	108	0	27,174	4
Syria and Lebanon . .	4,286	3,146	1,832	143	29,822	43,773	5,370	2,370	54,798	4,072
Algeria	139	33	2	0	4,557	3,069	79	304	4,799	324
Egypt	—	—	—	—	4,171	4,742	1,272	1,089	9,270	2,350
Un. of S. Africa . . .	25,964	14,147	—	—	1,164	1,563	31	40	2,721	57
Australia	1,069	485	—	—	184,766	200,529	2	0	228,426	0
New Zealand	85,826	28,001	670	2,132	5,518	4,722	639	743	6,228	1,519
Poland	6,107	3,353	0	2	671,250	662,718	2,903	6,451	703,392	7,035
Sweden	24,284	38,083	—	—	45,135	50,773	90	304	65,852	342
Switzerland	3,607	4,478	—	—	127,588	201,799	101	0	228,155	0
Yugoslavia	—	—	—	—	24,615	26,588	22	7	47,120	15
<i>Importing Countries:</i>										
Germany	106	265	36,958	47,049	4,950	1,338	143,909	219,654	2,899	285,918
Austria	168	276	6,003	8,267	1,623	5,079	38,676	51,390	5,935	62,340
Belgium	18	35	1,971	2,423	996	240	12,075	15,675	688	18,045
Denmark	8,675	10,018	19,266	16,901	65,530	72,978	135,382	137,049	96,175	175,077
Spain	2,414	1,296	366	370	13,047	20,574	2,302	4,491	24,134	5,463
Finland	20	7	201	333	260	161	2,206	3,843	225	5,031
France	461	260	1,184	353	2,317	3,693	5,798	3,221	4,367	7,132
Gr. Brit. and N. Irel.	7	0	439	412	209	11	3,578	3,854	42	5,615
Greece	3,415	4,220	35,614	42,437	28,457	39,633	219,458	278,701	51,035	374,902
Italy	32,055	39,979	121,656	92,206	193,723	264,055	565,485	664,224	356,872	843,540
Norway	0	22	681	258	379	690	4,407	2,538	1,369	4,612
Netherlands	18	196	9,967	15,166	525	644	49,110	93,964	1,243	142,633
Poland	9	302	1,276	1,349	1,120	2,970	8,263	13,861	4,092	21,129
Sweden	79	137	370	163	950	1,281	1,587	1,605	1,779	2,332
Switzerland	115	269	520	924	2,524	3,931	4,471	6,819	4,482	9,081
Yugoslavia	90	71	825	304	1,221	1,149	5,291	5,375	1,398	6,570
Canada	7	7	3,069	3,960	86	664	18,537	28,914	745	38,111
China	—	—	1,521	2,046	—	—	12,756	17,190	—	22,882
Japan	—	18	1,781	2,643	165	218	13,728	14,282	247	20,190
United States	123	150	2,767	3,719	1,239	1,475	19,244	25,342	2,507	35,285
Tunisia	31	9	593	337	884	183	4,804	3,452	320	6,260
Algeria	108	31	1,669	1,717	3,904	6,964	6,978	13,508	8,155	18,495
Egypt	304	545	15,459	13,567	1,618	4,297	76,401	125,911	4,405	156,050
India	0	0	21,782	30,327	71	115	131,107	169,177	381	202,370
China	75	42	26	15	534	337	198	265	996	377
Totals	237,255	178,629	289,001	289,704	1,663,760	1,903,343	1,498,611	1,917,525	2,251,924	2,486,081

Wool, greasy. b) = Wool, scoured. — x) 2) See notes page 482.

COUNTRIES	APRIL		TEN MONTHS (July 1-April 30)		TWELVE MONTHS (July 1- June 30)	COUNTRIES	APRIL		TEN MONTHS (July 1-April 30)		TWELVE MONTHS (July 1- June 30)
	1935	1934	1934-35	1933-34	1933-34		1935	1934	1934-35	1933-34	1933-34
Coffee. — (Thousand lb.).						Tea. — (Thousand lb.).					
EXPORTS.						EXPORTS.					
<i>Exporting Countries:</i>						<i>Exporting Countries:</i>					
Brazil . . . . .	...	...	¹⁾ 1,278,820	¹⁾ 1,685,380	2,097,337	Ceylon	18,768	19,773	166,569	158,065	210,494
India	1,781	3,126	10,604	16,976	20,565	China	11,850	13,314	83,551	87,491	104,153
Java and Madura .	3,818	3,333	56,194	54,651	64,360	India	4,605	4,709	300,242	288,952	311,611
<i>Importing Countries:</i>						Java and Madura .	11,211	7,628	98,443	85,013	107,044
Germany	0	15	66	205	234	Japan	3,078	699	27,979	28,593	31,720
Belgium	13	62	115	251	284	<i>Importing Countries:</i>					
France	0	0	7	57	71	Belgium	0	0	7	7	9
Gr. Britain and N.						Irish Free State .	0	2	254	31	159
Ireland	928	2,150	15,503	28,290	33,217	France	0	4	22	31	40
Netherlands	785	1,761	10,124	15,060	18,470	Gr. Britain and N. Ire.	5,095	3,618	55,881	67,270	78,736
Portugal	236	260	2,255	2,357	3,278	Netherlands	13	13	106	117	146
Switzerland	0	15	551	271	351	United States . . .	33	615	600	1,036	1,706
Canada	7	7	75	46	57	Syria and Lebanon .	0	0	9	0	2
United States	1,437	1,462	13,572	23,424	25,212	Algeria . . . . .	...	...	²⁾ 93	40	57
Ceylon	0	0	4	4	7	Union of S. Africa .	...	...	²⁾ 22	11	18
Syria and Lebanon .	0	0	0	2	2	Australia	44	37	692	842	928
Australia	9	4	44	31	40	New Zealand . . . .	...	...	¹⁾ 86	75	106
Totals	—	—	—	—	2,263,485	Totals	54,697	50,617	734,556	717,373	846,929
IMPORTS.						IMPORTS.					
<i>Importing Countries:</i>						<i>Importing Countries:</i>					
Germany	31,978	28,182	273,910	252,212	307,398	Germany	765	902	8,715	8,902	10,415
Austria	983	794	10,362	9,178	11,244	Austria	51	57	725	633	728
Belgium	10,721	8,345	86,358	92,628	109,656	Belgium	101	31	492	441	534
Bulgaria	88	68	902	884	1,074	Denmark	88	88	939	1,063	1,230
Denmark	4,870	4,866	49,148	49,018	57,814	Spain	26	35	229	267	359
Spain	4,478	4,116	43,431	50,896	67,149	Estonia	9	4	66	60	66
Estonia	11	13	137	128	152	Irish Free State . .	1,717	2,200	19,427	21,266	23,464
Irish Free State . .	44	37	445	437	545	Finland	18	20	212	214	251
Finland	3,422	2,560	32,040	30,993	37,038	France	196	148	1,764	3,743	3,968
France	33,777	29,275	327,172	347,536	409,056	Gr. Britain and N.					
Gr. Britain and N.						Ireland	28,464	27,975	454,387	410,992	470,574
Ireland	10,009	12,311	50,638	70,220	77,424	Greece	53	9	408	348	390
Greece	1,151	959	10,331	10,576	12,641	Hungary	62	15	529	348	381
Hungary	631	302	4,519	3,554	4,314	Italy	53	22	302	223	280
Italy	6,867	6,883	72,307	72,050	86,889	Latvia . . . . .	...	...	¹⁾ 62	42	51
Latvia . . . . .	...	...	¹⁾ 101	¹⁾ 150	278	Lithuania	11	13	75	71	84
Lithuania	53	22	355	291	359	Norway	29	29	284	317	381
Norway	4,345	4,722	27,878	32,346	37,366	Netherlands	2,048	2,048	25,258	22,699	25,942
Netherlands	5,320	7,632	50,898	123,036	137,461	Poland	489	291	3,331	3,210	3,719
Poland	2,079	1,173	14,127	14,425	16,852	Portugal	24	40	324	417	478
Portugal	1,122	913	13,036	11,213	12,035	Sweden	79	79	767	750	884
Sweden	8,338	9,390	79,082	80,392	96,759	Switzerland	190	141	1,340	1,347	1,576
Switzerland	2,476	3,373	24,271	28,305	32,058	Czechoslovakia . .	51	55	928	822	902
Czechoslovakia . .	2,185	1,836	19,621	19,879	23,177	Yugoslavia	15	13	406	333	388
Yugoslavia	1,206	853	11,188	11,837	13,823	Canada	2,584	6,713	24,487	39,494	41,246
Canada	2,092	3,201	24,795	28,841	36,110	United States . . .	6,050	4,493	72,074	77,883	87,691
United States	140,371	131,460	1,292,572	1,396,772	1,598,178	Chile	888	450	4,202	1,761	2,156
Chile	324	553	4,235	3,825	4,394	Syria and Lebanon .	26	33	467	260	273
Ceylon	254	152	2,705	2,478	3,150	Algeria . . . . .	...	...	¹⁾ 2,264	¹⁾ 3,649	3,863
Japan	708	425	5,714	5,077	6,124	Egypt . . . . .	...	...	¹⁾ 12,536	¹⁾ 12,520	15,166
Syria and Lebanon .	240	276	1,914	2,141	2,368	Tunisia	258	110	2,793	1,587	1,781
Algeria . . . . .	...	...	¹⁾ 22,924	¹⁾ 22,353	29,518	Union of S. Africa .	...	...	¹⁾ 8,735	¹⁾ 8,728	11,636
Egypt . . . . .	...	...	¹⁾ 11,402	¹⁾ 14,892	17,604	Australia	2,948	2,584	38,299	39,366	46,260
Tunisia	375	267	2,853	3,001	3,344	New Zealand . . . .	...	...	¹⁾ 6,949	¹⁾ 9,065	11,407
Un. of S. Africa . .	...	...	¹⁾ 16,693	¹⁾ 20,108	29,313	<i>Exporting Countries:</i>					
Australia	516	414	2,434	4,224	5,057	China	40	44	545	589	677
New Zealand . . . .	...	...	¹⁾ 223	¹⁾ 331	492	India	161	115	2,811	4,150	4,414
<i>Exporting Countries:</i>						Java and Madura .	86	134	1,495	1,715	2,019
India	0	0	0	0	2	Totals	47,580	48,891	698,627	679,285	775,632
Totals	281,034	265,373	2,590,721	2,816,227	3,288,216						

1) 2) See notes page 482.

COUNTRIES	APRIL		SEVEN MONTHS (Oct. 1-April 30)		TWELVE MONTHS (Oct. 1-Sept. 30)	COUNTRIES	APRIL		NINE MONTHS (Aug. 1-April 30)		TWELVE MONTHS (August 1-July 31)
	1935	1934	1934-35	1933-34	1933-34		1935	1934	1934-35	1933-34	1933-34
Cacao. — (Thousand lb.).						Total Wheat and Flour *)					
EXPORTS.						(Thousand centals).					
<i>Exporting Countries:</i>						<i>a) NET EXPORTS.</i>					
Granada . . . . .	...	...	3,497	2,465	9,612	Germany	4)	104	4)	4,176	2,716
Dominican Repub. . . . .	...	...	18,750	18,744	49,818	Bulgaria	0	104	0	2,319	2,366
Brazil . . . . .	...	...	135,710	95,621	211,552	Spain	0	0	0	37	42
Ecuador	4,769	7,833	12,994	17,498	37,278	Estonia	18	0	93	0	0
Trinidad . . . . .	...	...	12,024	14,107	29,057	France	362	4)	6,056	4)	4)
Venezuela . . . . .	...	...	7,474	7,972	25,223	Hungary	849	1,711	6,030	15,417	17,452
Ceylon	456	789	4,855	6,737	8,841	Latvia . . . . .	...	...	60	0	0
Java and Madura	9	2)	1,801	2,147	4,195	Lithuania	225	...	518	29	29
French Cameroon . . . . .	...	...	34,879	32,701	48,427	Poland	95	90	860	112	1,466
Ivory Coast . . . . .	...	...	69,389	49,545	78,681	Romania	143	4	139	141	139
Gold Coast	42,322	42,457	429,795	412,634	494,792	Sweden	357	4)	112	4)	4)
Nigeria and British Cameroon	8,426	7,463	138,016	127,474	159,165	Yugoslavia	134	49	2,335	368	626
Saint Thomas and Prince Is.	734	176	17,364	13,320	19,795	U. S. S. R. . . . .	...	...	1,179	3)	15,781
French Togoland . . . . .	...	...	11,149	10,486	12,932	Canada	3,713	3,020	78,919	82,358	115,972
						United States	4)	2,630	4)	13,060	15,346
						Argentina	8,550	6,237	84,195	59,655	87,308
						Chile . . . . .	...	...	112	470	4)
						India	29	22	423	216	223
						Syria and Lebanon	4)	...	168	4)	4)
						Algeria . . . . .	...	...	5,553	1)	5,287
						French Morocco . . . . .	...	...	2,460	1)	3,490
						Tunisia	196	4)	1,576	4)	4)
						Australia	6,521	3,056	50,735	38,164	50,651
						New Zealand . . . . .	...	...	4)	108	4)
Totals	58,590	61,623	917,382	830,816	1,221,596	Totals	21,192	17,139	241,881	240,718	325,956
IMPORTS.						<i>b) NET IMPORTS.</i>					
<i>Importing Countries:</i>						<i>Importing Countries:</i>					
Germany	13,477	21,568	106,246	119,385	218,563	Germany	344	5)	5,606	5)	5)
Austria	919	1,003	7,915	5,787	10,282	Austria	613	679	3,801	4,012	6,188
Belgium	1,376	1,556	11,744	18,797	24,403	Belgium	1,340	2,308	18,739	21,475	25,093
Bulgaria	126	40	487	498	798	Denmark	717	423	9,528	5,595	7,516
Denmark	597	908	4,361	4,065	8,468	Irish Free State	697	1,049	7,454	8,719	11,735
Spain	2,665	2,527	13,168	15,563	29,762	Finland	187	1,094	1,640	1,834	2,626
Estonia	130	29	459	465	644	France	5)	628	5)	8,534	10,304
Irish Free State	234	214	1,561	3,488	4,449	Gr. Brit. and N. Irel.	9,575	11,261	87,239	97,555	130,547
Finland	20	18	152	90	157	Greece	789	531	5,165	5,068	6,303
France	8,852	7,588	52,314	61,059	94,376	Italy	679	769	3,397	4,019	5,194
Gr. Brit. and N. Irel.	28,239	29,686	157,640	158,451	176,467	Norway	289	337	3,651	3,366	4,996
Greece	273	172	1,832	1,887	2,868	Netherlands	827	840	9,464	10,476	13,510
Hungary	1,054	611	5,417	4,147	6,477	Portugal	75	53	280	421	575
Italy	3,256	1,777	18,618	12,028	18,470	Sweden	5)	106	5)	854	721
Latvia . . . . .	...	...	774	1,100	1,585	Switzerland	6)	816	6)	7,449	6)
Lithuania	46	75	452	313	545	Czechoslovakia	108	0	591	99	104
Norway	765	434	4,445	3,314	5,564	Total Europe	17,056	19,919	164,004	179,875	235,963
Netherlands	13,944	14,330	87,056	88,811	124,522	United States	908	5)	3,168	5)	5)
Poland	3,239	1,413	11,045	8,719	14,253	Chile	57	5)	5)	567	227
Portugal	104	110	681	761	1,107	Ceylon	23	62	437	414	518
Sweden	1,045	1,049	8,018	6,815	9,749	China	2,328	1,347	8,327	9,434	12,547
Switzerland	2,231	2,588	8,417	12,282	16,455	Indo-China . . . . .	...	...	342	302	450
Czechoslovakia	2,041	2,515	13,649	15,536	23,488	Japan	148	518	1,096	1,733	2,414
Yugoslavia	128	66	1,038	1,049	1,537	Java and Madura	139	104	1,226	1,175	1,420
Canada	681	635	13,587	13,431	22,377	Syria and Lebanon	2	134	5)	527	858
United States	38,193	59,448	394,739	279,858	412,610	Egypt . . . . .	...	...	1,085	86	130
Japan	0	163	1,124	1,700	2,337	Tunisia	5)	130	5)	558	33
Australia	747	624	9,295	11,678	16,239	Union of S. Africa . . . . .	...	...	525	26	42
New Zealand . . . . .	...	...	1,534	1,894	2,487	New Zealand . . . . .	...	...	192	5)	214
Totals	124,380	147,147	937,768	851,869	1,251,039	Totals	20,671	22,214	180,402	194,697	254,816

*) Flour reduced to grain on the basis of the coefficient: 1000 centals of flour = 1,333.333 centals of grain.

a) Excess of exports over imports. — b) Excess of imports over exports.

1) Data up to 31 March. — 2) Data up to 28 February. — 3) Data up to 31 December. — 4) See Net Imports. —

5) See Net Exports. — 6) Wheat only.

STOCKS OF CEREALS

Commercial cereals in store in Canada and the United States.

SPECIFICATION	Friday or Saturday nearest 1st of month				
	June 1935	May 1935	April 1935	June 1934	June 1933
	1,000 centals				
WHEAT:					
Canadian in Canada	115,650	122,317	129,190	117,139	122,054
U. S. in Canada	120	629	629	0	2,881
U. S. in the United States	18,465	23,654	31,129	47,380	70,522
Canadian in the United States	5,622	7,151	9,793	3,152	2,765
Of other origin in the United States	869	513	209	0	0
Total	140,726	154,264	170,950	167,671	198,222
RYE:					
Canadian in Canada	2,049	2,089	2,144	2,150	2,835
U. S. in Canada	0	0	0	0	1
U. S. in the United States	5,151	4,795	5,405	5,883	4,931
Canadian in the United States	0	36	0	38	119
Of other origin in the United States	1,066	686	618	732	0
Total	8,266	7,606	8,167	8,803	7,886
BARLEY:					
Canadian in Canada	3,046	4,059	4,633	4,450	3,158
U. S. in Canada	0	0	0	0	10
U. S. in the United States	3,888	4,398	5,643	5,435	5,847
Canadian in the United States	126	90	556	0	0
Of other origin in the United States	264	264	135	0	0
Total	7,324	8,811	10,967	9,885	9,015
OATS:					
Canadian in Canada	2,404	3,215	4,904	3,597	3,334
U. S. in Canada	0	5	19	99	144
U. S. in the United States	3,521	3,740	5,010	8,396	7,667
Canadian in the United States	0	42	0	0	0
Of other origin in the United States	326	598	678	0	0
Total	6,251	7,600	10,611	12,092	11,145
MAIZE:					
U. S. in Canada	1,220	2,512	2,962	2,042	1,589
Of other origin in Canada	1,453	1,648	1,379	410	623
U. S. in the United States	5,960	8,298	11,957	25,904	21,716
Of other origin in the United States	677	389	430	0	0
Total	9,310	12,847	16,728	28,356	23,928

Quantities of cereals on Ocean passage with first destination Europe.

PRODUCTS	Saturday nearest 1st of month				
	June 1935	May 1935	April 1935	June 1934	June 1933
	1,000 centals				
Wheat (and flour in terms of grain)	21,734	18,072	17,467	18,350	23,669
Rye	418	720	1,334	235	701
Barley	776	564	1,980	1,588	1,140
Oats	851	570	650	896	928
Maize	13,478	11,731	6,298	12,533	14,414

AUTHORITY: Broomhall's Corn Trade News.

Stocks belonging to farmers in Germany.

PRODUCTS	% stocks: total production					Stocks in 1,000 centals				
	31 May 1935	30 April 1935 ¹	31 March 1935	31 May 1934	31 May 1933 ¹	31 May 1935	30 April 1935	31 March 1935	31 May 1934	31 May 1933
Winter wheat . . .	6	10	14	9	10	5,200	8,700	12,200	9,800	9,600
Spring wheat . . .	7	13	24	13	13	900	1,700	3,100	1,900	1,900
Winter rye . . .	9	14	19	10	11	14,900	23,200	31,500	19,000	20,100
Winter barley . . .	3	5	9	7	5	500	800	1,400	1,100	700
Spring barley . . .	7	12	20	6	5	3,900	6,600	11,100	3,600	2,900
Oats . . .	15	22	34	18	20	18,000	26,400	40,900	27,600	29,300
Late potatoes . . .	10	20	33	6	8	92,000	184,200	303,900	24,200	77,300

1) Average between data on 15 May and 15 June.

AUTHORITY: *Marktberichsstelle beim Reichsnährstand* (The absolute figures are calculated by the I. I. A.).

Stocks of cereals in commercial elevators and mills in Germany.

PRODUCTS	Last day of month				
	May 1935	April 1935	March 1935	May 1934	May 1933
	1,000 centals				
WHEAT:					
Grain	33,021	37,007	39,251	28,634	12,842
Flour for bread	3,106	3,183	3,536	2,498	2,540
TOTAL 1)	37,355	41,429	44,163	32,104	16,369
RYE:					
Grain	27,397	31,220	32,767	18,389	11,526
Flour for bread	1,510	1,587	2,022	1,537	1,327
TOTAL 1)	29,617	33,555	35,741	20,649	13,477
BARLEY	1,892	2,694	2,467	1,911	1,545
OATS	2,661	2,811	2,542	1,074	1,570

1) Including flour in terms of grain, on the basis of the coefficient: 1,000 centals of wheat flour = 1,388.89 centals of wheat; 1,000 centals of rye flour = 1,470.59 centals of rye.

Grain and flour stocks at the ports of Great Britain and Ireland 1).

PRODUCTS	First day of month				
	June 1935	May 1935	April 1935	June 1934	June 1933
	1,000 centals				
WHEAT:					
Grain	5,664	5,952	6,528	7,368	7,104
Flour as grain	528	528	720	1,008	744
TOTAL	6,192	6,480	7,248	8,376	7,848
BARLEY	480	720	960	1,040	880
OATS	288	336	352	288	512
MAIZE	1,680	1,728	3,072	2,880	1,368

1) Imported cereals.

AUTHORITY: *Broomhall's Corn Trade News*.

Stocks of wheat in Italy.

LOCATION	Last day of month				
	March 1935	February 1935	January 1935	December 1934	November 1934
	1,000 centals				
Wheat destined for sale by holding pools ("ammassi collettivi,,):					
in collective granaries	1,105	4,202	6,521	7,807	8,003
in granaries of producers or other persons	99	508	1,003	1,313	1,334
Total . . .	1,204	4,710	7,524	9,120	9,337
Wheat in general stores and in free zones 2)	3,931	5,292	6,268	7,578	8,031
Wheat in bond in the chief entrepot centres	886	888	710	1,110	697
Wheat in mills and attached elevators 3) .	6,647	7,425	8,900	9,616	11,773
GRAND TOTAL . . .	12,668	18,315	23,402	27,424	29,838

1) Including a small quantity of wheat belonging to holding pools which is stored in general stores. — 2) Not including quantities belonging to holding pools; see previous note. — 3) Provisional figures referring to mills which have a daily capacity of not less than 40 metric quintals.

Commercial stocks of cereals in Antwerp, Rotterdam and Amsterdam 1).

PRODUCTS AND LOCATION	Saturday nearest 1st of month 2)				
	June 1935	May 1935	April 1935	June 1934	June 1933
	1,000 centals				
WHEAT:					
Antwerp	1,219	1,638	1,903	1,980	2,289
Rotterdam	505	706	592	1,302	1,263
Amsterdam	16	12	16	46	23
RYE:					
Antwerp	155	1	105	102	83
Rotterdam	254	220	132	265	121
Amsterdam	2	2	4	36	6
BARLEY:					
Antwerp	337	437	312	224	182
Rotterdam	77	243	276	110	66
Amsterdam	11	1	4	55	12
OATS:					
Antwerp	41	57	66	97	18
Rotterdam	0	18	13	143	88
Amsterdam	21	26	31	21	30
MAIZE:					
Antwerp	92	193	185	36	125
Rotterdam	55	22	132	121	198
Amsterdam	20	10	29	56	38

1) Imported cereals. See note on p. 306 of the *Crop Report* of April 1934. — 2) For Antwerp the data refer to the last day of the preceding month, for Amsterdam to the first day of the month indicated.

AUTHORITIES: *Nederlandsche Silo-, Elevator- en Graanfactor Mij.*, Amsterdam, and *Chamber of Commerce and Industry for Rotterdam, Rotterdam*.

STOCKS OF COTTON

Stocks of cotton on hand in the United States.

LOCATION	Last day of month				
	May 1935	April 1935	March 1935	May 1934	May 1933
	1,000 centals				
In consuming establishments	4,821	5,226	5,501	6,999	6,856
In public storage and at compresses . . .	32,343	35,508	38,383	32,390	36,014
TOTAL . . .	37,164	40,734	43,884	39,389	42,870

Stocks of cotton at Bombay and at Alexandria.

PORTS	Thursday nearest 1st of month				
	June 1935	May 1935	April 1935	June 1934	June 1933
	1,000 centals				
Bombay 1)	3,112	3,132	3,272	4,656	3,824
Alexandria 2)	1,481	1,832	2,062	2,310	3,151

1) Stocks held by exporters, dealers and mills. — 2) From February 1934 quantities consumed in Alexandria as well as those returned to the interior of the country are not included; prior to this date quantities returned to the interior are included.

AUTHORITIES: *East Indian Cotton Ass. and Commission de la Bourse de Minet-el-Bassal.*

Stocks of cotton in Europe.

LOCATION, DESCRIPTION	Thursday or Friday nearest 1st of month				
	June 1935	May 1935	April 1935	June 1934	June 1933
	1,000 centals				
<i>Great Britain:</i>					
American	1,131	1,306	1,418	2,161	1,935
Argentine, Brazilian, etc.	357	475	656	531	98
Peruvian, etc.	354	411	468	274	182
East Indian, etc.	252	182	205	375	136
Egyptian, Sudanese	1,141	1,165	1,173	1,606	1,020
W. Indian, W. and E. African, Australian	179	174	170	202	330
TOTAL . . .	3,414	3,713	4,090	5,149	3,701
<i>Bremen:</i>					
American	762	896	990	2,275	2,406
Other	261	280	196	170	78
TOTAL . . .	1,023	1,176	1,186	2,445	2,484
<i>Le Havre:</i>					
American	498	532	629	1,041	963
French colonies	9	10	15	36	11
Other	84	76	95	87	30
TOTAL . . .	591	618	739	1,164	1,004
<i>Total Continent 1):</i>					
American	1,809	1,848	1,982	3,898	4,254
Argentine, Brazilian, etc.	130	136	134	57	27
E. Indian, Australian, etc.	247	196	148	224	89
Egyptian	252	259	262	124	117
W. Indian, W. African, E. African, etc. .	107	121	99	173	108
TOTAL . . .	2,545	2,560	2,625	4,476	4,595

1) Includes Bremen, Le Havre, and other Continental ports.

AUTHORITIES: *Liverpool Cotton Ass. and (for Le Havre) Bulletin de correspondance de la Bourse du Havre.*

WEEKLY PRICES BY PRODUCTS

(All quotations are, unless otherwise stated, spot. The monthly averages are based on the weekly quotations, and the annual on the monthly.)

DESCRIPTION	14	7	31	24	AVERAGE					Commercial	
	June	June	May	May	May	June	June	Season 1)			
	1935	1935	1935	1935	1935	1934	1933	1933-34	1932-33		
Wheat.											
Budapest: Tisza wheat, 78 kg. p. hl. (pengő p. quintal)	17.20	17.20	16.67	16.82	16.73	13.10	13.17	9.70	13.73		
Braila: Good quality (lei p. quintal)	n. q.	n. 400	n. q.	n. 380	*n.382	n. q.	n. q.	* 375	* 535		
Winnipeg: No. 1 Manitoba (cents p. 60 lb.)	80 ³ / ₈	82 ¹ / ₄	81 ³ / ₈	85 ¹ / ₂	85 ³ / ₈	77 ³ / ₈	66 ³ / ₈	67 ³ / ₈	54 ¹ / ₄		
Chicago: No. 2 Hard Winter (cents p. 60 lb.)	n. 93	n. 96	n. 96	n. 100	n. 101 ¹ / ₄	n. 97	n. 78	89 ¹ / ₈	59 ¹ / ₄		
Minneapolis: No. 1 Northern (cents p. 60 lb.)	96 ³ / ₈	102 ³ / ₈	100 ⁷ / ₈	110 ³ / ₈	111 ⁷ / ₈	101 ³ / ₈	80 ³ / ₈	89 ³ / ₈	60 ³ / ₈		
New-York: No. 2 Hard Winter (cents p. 60 lb.)	100 ³ / ₈	101 ³ / ₈	103 ¹ / ₈	107 ¹ / ₈	109 ⁷ / ₈	107 ³ / ₈	89 ³ / ₈	98 ³ / ₈	68 ³ / ₈		
Buenos Aires (a): Barletta, 80 kg. p. hectol. (paper pesos p. quintal)	6.92	7.05	7.05	7.15	7.23	6.12	5.88	5.85	6.09		
Karachi: Karachi white, 2% barley 1 ½ % dirt (rupees p. 656 lb.)	22-12-0	22-11-0	22-13-0	23-1-0	22-15-0	21-11-7	25-10-5	22-2-4	28-4-2		
Berlin: Home grown (free at Branden- burg stations; Rm. p. quintal) 2)	20.80	20.80	20.80	20.80	20.80	19.50	19.12	18.65	19.60		
Hamburg (c. i. f.; Rm. p. quintal):											
No. 2 Manitoba 3)	8.68	8.78	9.10	9.12	9.25	8.51	9.02	7.94	8.83		
Barusso 4)	6.63	6.60	6.71	6.77	6.77	5.95	7.66	6.22	7.76		
Antwerp (francs p. quintal):											
Home-grown	83.00	82.00	82.00	79.00	79.80	67.00	84.40	63.00	79.70		
No. 1 Manitoba (Atlantic) (in bond)	103.00	104.00	108.00	109.00	110.20	71.70	75.90	67.65	74.35		
Barusso (in bond)	76.50	77.50	79.00	79.00	79.40	50.70	61.70	53.00	66.20		
Paris: Home-grown (delivery regional depots; 76 kg. p. hl.; frs. p. quintal) 5)	82.00	82.00	82.00	82.00	81.20	132.00	96.15	125.65	107.35		
London: Home grown (sh. p. 504 lb.) 6).	24/6	24/6	24/6	24/6	24/4 ¹ / ₈	25/-	27/10 ³ / ₈	20/10	24/8 ¹ / ₈		
Liverpool and London (c. i. f.; parcels, ship- ping current month; sh. p. 480 lb.)											
French (on sample)	n. q.	n. q.	n. q.	n. q.	*19/10 ¹ / ₈	* 19/6	n. q.	n. q.	n. q.		
No. 1 Northern Manitoba (Atlantic)	n. 30/-	n. 30/9	n. 30/10 ¹ / ₂	n. 32 ¹ / ₄	n. 32 ⁵ / ₈	28.10	27.1 ¹ / ₂	26/9	26/8 ¹ / ₈		
No. 1 Northern Manitoba (Pacific)	29/4 ¹ / ₂	30/6	30/3	31/9	31/10 ¹ / ₈	28/4 ¹ / ₈	27/0 ¹ / ₈	26/7	26/4		
No. 3 Northern Manitoba (Pacific)	26/9	27/9	27/9 ¹ / ₄	29/4 ¹ / ₈	29/4 ¹ / ₈	26/3	25/8 ¹ / ₈	24/5 ¹ / ₈	25/2 ¹ / ₈		
White Pacific	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	*20/5	n. q.		
Rosafé (afloat) 7)	23/3	23/9	23/-	23/6	23/5 ¹ / ₈	20/1 ¹ / ₄	22/3 ¹ / ₈	19/5 ¹ / ₄	23/2		
Australian	26/6	26/6	26/9	26/9	27/2 ¹ / ₈	24/10 ¹ / ₈	25/10 ¹ / ₈	23/4	25/7		
Milan (b): Home-grown, soft, • Buono mer- cantile • 76-78 kg. p. hl. (lire p. quint.)	109.00	113.00	122.00	118.00	112.75	82.30	89.50	84.10	101.80		
Genoa: Sicilian Durum (c. i. f.; lire p. quint.)	n. q.	122.00	123.50	122.00	122.85	107.50	111.60	107.85	* 119.75		
Genoa (c. i. f.; U. S. \$ p. quintal):											
No. 2 Manitoba (Pacific)	11) 3.40	11) 3.51	11) 3.42	11) 3.68	11) 3.66	* 3.16	2.56	* 2.87	* 2.51		
No. 2 Canadian Durum 8)	3.61	3.78	3.67	3.96	4.09	* 3.46	n. q.	3.11	2.29		
Bahia Blanca, 79 kg. p. hl. 9)	110/-	113/-	111/-	115/-	115/10	*100/9	n. q.	* 93/6	* 1.84		
Rye.											
Berlin: Home-grown (free at Branden- burg stations; Rm. p. quintal) 2)	16.80	16.80	16.80	16.80	16.80	16.50	15.32	15.34	15.52		
Hamburg (c. i. f.; Rm. p. quintal): Plata, 72-73 kg. p. hl.	4.86	4.85	5.03	5.04	5.06	4.85	5.81	4.76	* 5.98		
Budapest: Pest rye (pengő p. quintal)	11.62	11.75	11.05	11.32	11.38	6.46	5.61	5.24	6.77		
Warsaw: Good quality (zloty p. quint.)	13.87	13.62	14.37	14.87	14.57	14.25	19.45	14.32	18.06		
Winnipeg: No. 2 (cents p. 56 lb.)	40 ¹ / ₈	43 ¹ / ₈	40 ¹ / ₈	45 ¹ / ₈	46 ¹ / ₈	53 ¹ / ₈	52	47 ³ / ₈	37 ³ / ₈		
Minneapolis: No. 2 (cents p. 56 lb.)	45 ³ / ₈	47 ³ / ₈	49 ³ / ₈	53 ¹ / ₈	55 ¹ / ₈	68	63 ¹ / ₈	63	41 ³ / ₈		
Groningen (c): Home-grown (fl. p. quint.)	n. q.	7.27	7.30	7.25	7.26	n. q.	3.57	6.65	3.92		

* Indicates that the product, during part of the period under review, was not quoted. — n. q. = not quoted. — n. = nominal. — a) Thursday prices. — b) Saturday prices. — c) Prices of preceding Tuesday.

1) August-July. — 2) 1 Oct. 1933-15 Aug. 1934 for wheat and 1 Oct. 1933-15 July 1934 for rye: minimum prices; subsequently, fixed producers prices for the price region of Berlin city. See also *Bull. of Agric. Economics and Sociology*, Aug. 1934, p. 342. — 3) From Nov. 1934, No. 1 Manitoba. — 4) Aug.-Dec. 1932: 80 kg. p. hl.; year 1933: 79 kg.; subsequently: 80 kg. — 5) 16 July 1933-25 December 1934: minimum prices on the farm increased by transport costs from farm to Paris stations. — 6) From Aug. 1933: prices on the farm. — 7) August-Dec. 1932: 64 lb. p. bushel; Jan.-Oct. 1933: 63 ½ lb.; Nov.-Dec. 1933: 63 lb.; year 1934: 64 lb.; subsequently: 63 ½ lb. — 8) From Dec. 1934: No. 1. Can. Dur. — 9) From Feb. 1934: prices in sh. p. 1000 kg. — 10) Price 23 May. — 11) Atlantic.

DESCRIPTION	14	7	31	24	AVERAGE				Commercial	
	June 1935	June 1935	May 1935	May 1935	May 1935	June 1934	June 1933		Season 1)	
								1933-34	1932-33	
Barley.										
Warsaw: Malting, good quality (zloty p. quintal)	16.75	16.75	17.25	17.25	17.45	n. q.	n. q.	* 15.87	* 17.11	
Braila: Average quality (lei p. quintal).	210	210	n.190	n.190	208	211	167	* 154	* 186	
Prague: Malting, av. qual. (crs. p. quintal) 2)	135.50	135.50	135.50	135.50	135.50	118.00	101.10	* 94.20	* 83.30	
Winnipeg: No. 4 Western (cents p. 48 lb.)	35 3/4	38 1/2	39 1/2	39 1/2	38 7/8	41 7/8	35	* 36 7/8	* 29 3/4	
Chicago: Feeding (on sample; cents p. 48 lb.)	40	50	48	50	60 5/8	64	39 3/4	54	33 1/4	
Minneapolis: No. 2 Feeding (c. p. 48 lb.)	42	45	46	49	52 3/4	52	33 3/8	45 1/2	27 1/2	
Berlin: Home-grown fodder (free at Brandenburg stations; Rm. p. quint.) 3) 4)	16.70	16.70	16.70	16.70	16.70	* 17.89	16.77	* 16.17	* 16.58	
Antwerp: Danubian (in bond; francs p. q.)	78.00	78.00	77.00	75.00	75.00	75.00	58.30	52.00	49.35	55.50
London: English malting, best quality (sh. p. 448 lb.) 5)	n. 32/6	n. 32/6	n. 32/6	n. 32/6	n. 32/6	n. q.	* 28/9	* 39 5/16	* 35/-	
Liverpool and London (c.i.f., parcels; shipping current month; sh. p. 400 lb.):										
Danubian, 3 % dirt.	15/3	15 1/4	n. 15/3	16/3	n. q.	* 16/9	15 1/4	* 13 9/16	* 16/7	
No. 3 Canadian Western	17 1/4 1/2	18/6	18 7/16	19/6	19 1/4 1/2	19/-	17 6/16	17 9/16	* 18 1/16	
California malting (sh. p. 448 lb.)	n. q.	n. q.	n. q.	n. q.	n. q.	* 20 8/16	n. 23 8/16	22 7/16	22/8	
Plate (64-65 kg. p. hl)	16 1/4 1/2	16/6	16/6	16/6	16 1/4 1/2	16 8/16	15 8/16	14 2/16	* 15 9/16	
Persian	16/-	16/-	16/6	16/6	16/2	15 8/16	15/-	* 14 0/16	* 16/4	
Groningen a): Home grown, winter (fl.p.q.)	5.15	5.07	5.00	5.02	5.02	4.95	3.61	4.44	4.40	
Oats.										
Braila: Good quality (lei p. quintal)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	* 148	* 195	
Winnipeg: No. 2 White (cents per 34 lb.)	39 1/2	40 1/8	40 1/2	41 1/2	40 3/8	37 1/8	28 7/8	33 7/8	26 1/2	
Chicago: No. 2 White (cents per 32 lb.)	39 1/2	41	37	42	44 1/2	31 1/4	43 1/8	37 1/4	21 1/2	
Buenos Aires b): Current quality (paper pesos p. quintal)	5.45	5.50	5.50	5.55	5.51	4.03	3.97	3.65	4.43	
Berlin: Home grown (free at Brandenburg stations; Rm. p. quint.) 3)	16.90	16.90	16.90	16.90	16.90	* 18.79	13.81	14.92	13.05	
Paris: Home grown, black and other (delivery regional depots; frs.p. quintal).	44.75	48.85	51.25	50.85	48.50	52.40	62.60	48.00	76.30	
London: Home grown white (sh.p. 336 lb.) 5)	23/-	23/-	22/-	22/-	22/-	19/6	18/-	18 1/16	18/6	
Liverpool and London (c.i.f., parcels; shipping current month; sh. p. 320 lb.):										
Canadian, No. 2 Western (Pacific) 6)	10) 19/9	10) 20 4/16	10) 20 4/16	10) 21 3/16	10) 20 7/16	18 6 1/16	15 1 3/16	* 17/4	* 16/9	
Plate (f.a. q.)	13/3	13/3	13/3	13/6	13 1/4 1/2	9/10 1/2	11 7/16	10/2	12/9	
Milan (c) (lire p. quintal):										
Home grown	n. 67.50	n. 67.50	n. 67.50	n. 67.50	n. 67.50	51.00	53.00	50.70	62.80	
Foreign	67.00	67.00	67.00	66.00	64.50	48.20	49.00	50.05	57.10	
Maize.										
								1934-35	1933-34	
Braila: Average quality (lei p. quintal)	235	220	n.220	n.220	219	n.258	151	* 223	* 173	
Chicago: No. 3 Yellow (cents p. 56 lb.)	83 1/2	86 1/2	84 1/2	86 1/2	87 1/2	* 58 3/4	43 1/2	78 1/2	46 1/8	
Buenos Aires (b): Yellow Plata (paper pesos p. quintal)	4.55	4.52	4.50	4.57	4.55	5.07	3.86	5.72	4.26	
Antwerp (in bond; francs p. quintal):										
Yellow Plata	59.00	58.00	60.50	60.00	60.40	46.30	47.80	53.70	48.35	
Cinquantino (Argentine "Cuarentino")	70.00	69.00	71.00	71.00	70.30	58.20	68.90	58.25	58.00	
Liverpool and London (c.i.f., parcels; shipping current month; sh. p. 480 lb.):										
Danubian	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	16/-	* 20/-	16 9/16	
Yellow Plata	16/6	16/3	16 1/16	16 1/4 1/2	16 1/4 1/2	17/8	16 1/16	19 8/16	16/7	
No. 2 White flat African	18/-	17/10 1/2	17 1/10 1/2	n. q.	* 18 1/16	19 6/16	n. q.	21 1/4 1/2	n. q.	
Milan (c): "Alto Milanese" (lire p. quint.)	79.00	82.00	87.00	79.00	73.75	62.10	50.25	58.50	58.80	

* Indicates that the product, during part of the period under review, was not quoted. — n. q. = not quoted. — n. = nominal. — a) Prices of preceding Tuesday. — b) Thursday prices. — c) Saturday prices.

1) Barley and oats: August-July; maize: May-April. — 2) From August 1934: monopoly price, paid to producers, for delivery Prague. See also *Bull. of Agric. Econ. and Soc.*, Nov. 1934, p. 532 — 3) From 16 July 1934 for fodder barley and from 1 August 1934 for oats: fixed producers' prices for the price region of Berlin city. See also *Bull. of Agric. Econ. and Soc.*, Aug. 1934, p. 342. — 4) July-August 1933: two rowed winter barley; Sept. 1933-June 1934: spring barley, average quality. — 5) From Aug. 1933: prices on the farm. — 6) June-Dec. 1934: Atlantic. — 7) Price of 23 May. — 8) Shipping July-August. — 9) Shipping August-Sept.; new crop. — 10) Atlantic.

DESCRIPTION	14	7	31	24	AVERAGE				Commercial	
	June	June	May	May	May	June	June	Season 1)		
	1935	1935	1935	1935	1935	1934	1933	1934	1933	
Rice (milled).										
Valencia (a): No. 3 Belloch (pesetas p. quintal)	57.50	57.50	57.50	57.00	57.20	46.62	41.80	46.95	43.10	
Milan (b) (lire p. quintal):										
Vialone, oiled	154.50	157.00	157.00	155.00	155.00	190.20	226.25	177.10	198.20	
Maratelli, oiled	133.50	135.50	134.50	131.00	131.00	144.10	157.50	138.05	139.90	
Originario, white	127.50	128.50	128.00	122.50	120.85	103.80	99.60	102.80	95.50	
Rangoon: No. 2 Burma (rupees p. 7500 lb.)	n. q.	265	260	260	255 1/2	188 1/2	199 1/2	201 1/4	194 1/4	
Saigon (Indo-chinese piastres p. quintal):										
No. 1 Round white, 25 % broken . . . . .	...	...	4.43	4.60	a) 4.57	2.80	4.48	3.25	4.08
No. 2 Japan, 40 % broken . . . . .	...	...	4.20	4.38	a) 4.36	2.66	4.26	3.09	3.90
Marseilles (a): No. 1 Saigon (c. i. f.; frs. p. quintal)	55.00	60.00	60.00	58.00	56.00	43.00	59.00	45.95	53.10	
London (a) (c. i. f.; shillings p. cwt.):										
No. 3 Spanish Belloch, oiled.	13/-	15/-	15/-	n. q.	n. q.	9/9 1/4	*12/-	*10/9	12/5 1/4	
No. 6 Italian good, oiled	n. q.	n. q.	n. q.	n. q.	n. q.	10/11 1/4	12/8 1/2	11/10 1/4	11/2 1/4	
American Blue Rose, extra fancy	15/0 3/4	15/0 3/4	15/0 3/4	14/11 1/4	14/11 1/2	17/3	17/4 3/4	17/3 1/2	16/9 1/4	
No. 2 Rangoon or Bassein (Burma)	8/-	7/10 1/2	7/10 1/2	8/0 3/4	8/1 1/2	6/3 3/4	6/10	6/7 3/4	6/6 1/4	
No. 1 Saigon	7/6	7/6	7/6	8/-	8/0 1/2	5/6 1/2	7/1 1/4	6/3 1/4	6/9 1/4	
Siam Super, white	9/7 1/2	9/9	10/3	10/6	10/6 1/4	6/9 1/4	9/1 1/2	7/5	8/1 1/4	
Tokyo: Chumai (brown Japanese, average quality, yen p. koku)	28.80	29.30	28.80	28.90	29.14	25.06	21.52	26.09	21.62	
Linseed.										
Buenos Aires (a): Current quality (paper pesos p. quintal)	11.90	12.00	12.00	11.90	11.91	14.01	11.52	12.74	10.56	
Antwerp: Plate (in bond; frs. p. quint.).	132.50	131.00	132.00	130.00	130.30	117.50	119.60	107.60	111.70	
London (c. i. f.; £ p. long ton):										
Plate (delivery Hull)	9-7-6	9-7-6	9-8-9	9-10-0	9-9-3	10-15-9	10-5-6	10-0-8	9-11-11	
Bombay bold	11-17-6	12-0-0	12-3-9	12-5-0	12-5-0	12-12-6	11-15-6	11-17-0	11-5-4	
Duluth: No. 1 Northern (quotations of terminal market; cents p. 56 lb.)	a) 164	a) 163 1/2	166 1/2	173 1/2	173 1/2	188 1/4	171 1/4	186 1/4	156 1/4	
Cotton seed.										
Alexandria (piastres p. ardeb):										
Upper Egypt	n. 60.2	n. 62.4	n. 64.0	67.2	66.6	41.5	* 59.9	41.8	67.3	
Sakellaris	n. 54.2	n. 56.4	n. 58.0	60.7	59.6	37.9	56.3	* 37.5	63.6	
London: Sakellaris (c. i. f., delivery Hull; £ p. long ton)	n. 5-12-6	n. 5-15-0	n. 5-18-9	n. 6-2-6	n. 6-3-0	4-4-3	5-19-9	4-5-11	6-11-4	
Cotton.										
New Orleans: Middling (cents p. lb.)	12.05	11.90	11.40	12.40	12.21	12.07	9.35	10.90	7.27	
New York: Middling (cents p. lb.)	11.95	11.80	11.30	12.35	12.16	12.11	9.48	11.07	7.38	
Bombay: M. g. Broach f. g. (terminal market quotations; rup. p. 784 lb.).	a) 229	a) 227	230	251	245 3/4	207 3/4	210 1/2	197	201 1/4	
Alexandria (talaris p. kantar):										
Sakellaris, f. g. f.	14.60	14.50	14.50	15.10	14.80	15.28	14.97	14.44	14.15	
Ashmuni-Zagora, f. g. f.	13.40	13.17	13.25	13.70	13.50	12.27	13.20	11.63	12.46	
Bremen: Middling (U. S. cents p. lb.)	13.74	13.83	13.85	14.22	14.12	14.07	10.70	12.56	8.54	
M. g. Broach, f. g. (pence p. lb.)	n. 6.25	n. 6.25	n. 6.25	n. 6.45	n. 6.46	5.16	5.00	4.81	4.81	
Le Havre: Middling (Guilf; frs p. 50 kg.).	242.50	244.50	252.00	254.00	249.30	239.40	257.40	229.85	237.75	
Liverpool (pence per lb.):										
Middling, fair	n. 7.66	n. 7.73	n. 7.82	n. 7.96	n. 7.87	7.64	7.45	7.11	6.76	
Middling	6.76	6.83	6.92	7.01	6.90	6.59	6.25	6.02	5.61	
Sao Paulo, g. f.	n. 6.86	n. 6.88	n. 6.97	7.01	6.97	6.49	6.50	6.13	5.87	
C. p. Oomra, superfine	5.95	5.97	5.93	6.07	6.07	5.33	5.44	4.92	5.22	
M. g. Broach, f. g.	5.67	5.69	5.70	5.88	5.86	5.05	5.29	4.62	5.01	
Egyptian Sakellaris, f. g. f.	8.05	8.10	8.16	8.35	8.35	8.41	8.33	8.07	7.77	
Upper Egyptian, f. g. f.	7.33	7.35	7.60	7.94	7.84	6.91	7.39	6.64	7.01	

* Indicates that the product, during part of the period under review, was not quoted. — n. q. = not quoted. — n. = nominal. — a) Thursday prices. — b) Saturday prices.
 1) Cottonseed: Sept.-Aug.; cotton: Aug.-July. — 2) 17 May: 4.56; 10 May: 4.60; 3 May: 4.65. — 3) 17 May: 4.32; 10 May: 4.43; 3 May: 4.48. — 4) July futures. — 5) July-August futures.

DESCRIPTION	14	7	31	24	AVERAGE					Commercial Season	
	June	June	May	May	May	June	June				
	1935	1935	1935	1935	1935	1934	1933			1934	1933
Bacon.											
London, Provision Exchange (a) (shill. p. cwt.):											
English, No 1, lean sizable.	98/-	96/-	96/-	96/-	93/6	91/2	...	91/2	...	74/5	...
Danish, No 1, sizable.	97/-	95/-	95/-	95/-	92/7	89/2	72/5	87/11	...	83/4	...
Irish, No 1, sizable.	97/6	96/6	96/6	96/6	93/10	92/7	87/7	90/5	...	67/6	...
Lithuanian, No 1, sizable.	92/-	88/-	88/-	88/-	86/10	84/-	64/-	82/-	...	70/-	...
Dutch, No 1, sizable.	95/-	92/-	92/-	92/-	89/7	87/2	67/7	84/-	...	64/6	...
Polish, No 1, sizable.	90/-	86/-	86/-	86/-	84/10	83/-	62/2	80/11	...	67/6	...
Swedish, No 1, sizable.	95/-	92/-	92/-	92/-	89/7	86/2	68/7	84/4	...	67/6	...
Canadian, No 1, sizable.	90/-	86/-	86/-	86/-	84/10	80/2	58/10	80/3	...	64/6	...
Butter.											
Copenhagen (b): Danish (cvs. p. quint.) . .	164.00	158.00	158.00	158.00	148.40	134.00	145.60	160.75	...	171.00	...
Leeuwarden, Commission for butter quotations (b): Dutch (cents p.kg.)	38	38	38	36	34 3/4	40 1/4	52	44 3/4	...	60	...
Zutphen, auction: Dutch (price for home consumption; cents p. kg.)	153	151	151	149	147 3/4	143	154	147 3/4	...	159 3/4	...
Germany (c) (fixed prices; Rm. p. 50 Kg.) 1):											
Butter with quality mark.	130.00	130.00	130.00	130.00	130.00	126.00	113.01	129.04	...	112.72	...
Creamery butter.	123.00	123.00	123.00	123.00	123.00	117.00	108.00	120.87	...	106.25	...
London (d): English creamery, finest quality (shillings p. cwt.)	112/-	107/4	107/4	107/4	107/4	109/8	130/8	109/6	...	140/10	...
London, Provision Exchange (a) (shill. p. cwt.):											
Danish creamery, unsalted.	101/6	98/-	98/-	97/6	92/11	86/-	90/2	98/8	...	103/9	...
Estonian, unsalted.	78/-	n. q.	n. q.	74/-	* 72/9	71/1	* 77/-	* 67/11	...	* 84/4	...
Latvian, unsalted.	n. q.	n. q.	n. q.	n. q.	n. q.	71/1	77/7	* 69/3	...	* 82/9	...
Dutch creamery, unsalted.	77/-	75/-	78/-	73/6	* 73/10	73/2	89/2	80/4	...	103/4	...
Argentine, finest, unsalted.	n. q.	n. q.	n. q.	72/-	* 72/4	n. q.	76/7	* 68/3	...	* 77/10	...
Siberian, salted.	79/6	77/-	75/-	73/6	71/8	* 69/6	n. q.	* 66/-	...	* 73/5	...
Australian, finest, salted.	84/-	82/-	80/6	79/-	77/2	73/7	78/5	70/2	...	80/-	...
New Zealand, finest, salted.	86/-	83/-	81/6	80/-	78/11	77/6	79/3	72/7	...	81/1	...
Cheese.											
Milan (lire p. quintal):											
Parmigiano-Reggiano, 1st quality, production 1932 2)	720.00	715.00	720.00	715.00	719.00	n. q.	1,262.00	989.00	...	1,234.00	...
Parmigiano - Reggiano, 1st quality, production 1933 2)	625.00	625.00	625.00	625.00	625.00	745.00	1,050.00	806.00	...	1,015.00	...
Green Gorgonzola, mature, choice. . . .	540.00	540.00	535.00	515.00	515.00	425.00	459.00	412.60	...	473.70	...
Rome: Roman Pecorino, choice (lire p. q)	787.00	787.00	787.00	787.00	787.00	667.50	1,072.50	658.65	...	1,023.00	...
Alkmaar: Edam 40 + (40 % butterfat, with the country's cheese mark) factory cheese, small (florins p. 50 kg.)	13.00	14.00	14.00	13.50	12.90	21.10	24.20	20.98	...	22.40	...
Gouda: Gouda 45+ (whole milk cheese, with the country's cheese mark) home made (florins p. 50 kg.).	16.00	16.00	16.00	16.00	14.80	21.80	26.50	22.52	...	26.59	...
Kempten (c) (Rpf. p. 1/2 kg.):											
Soft cheese, green, 20 % butterfat. . .	26	26	26	26	26	19 3/4	19 3/4	23 3/4	...	20 7/8	...
Emmenthal from the Allgäu, whole milk cheese, 1st quality.	77	77	77	77	75 3/4	71	70 3/4	71 1/2	...	72 1/2	...
London, Provision Exchange (a) (shill. p. cwt.):											
English Cheddar, finest farmers. . . .	86/-	86/-	86/-	86/-	86/-	* 64/-	91/6	* 83/5	...	86/3	...
English Cheshire, officially graded 3) .	56/-	53/8	88/8	88/8	88/8	58/4	72/10	83/4	...	94/4	...
Italian Gorgonzola (d).	109/8	109/8	109/8	109/8	109/11	84/7	79/-	82/9	...	85/3	...
Dutch Edam, 40 + (d)	33/3	35/-	34/9	33/-	33/-	48/10	50/9	54/5	...	59/8	...
Canadian, finest white.	63/-	63/-	63/-	63/-	62/2	55/-	67/3	54/-	...	59/8	...
New Zealand, finest white.	44/-	43/3	43/3	43/3	43/6	47/9	47/9	46/5	...	46/10	...

* Indicates that the product, during part of the period under review, was not quoted. — n. q. = not quoted. — n. = nominal — a) Average prices of Thursday and Friday morning. — b) Thursday prices. — c) Wednesday prices. — d) Average prices for the week.

1) See note on page 306 of the *Crop Report* of April 1934. — 2) Prices of cheese made in 1932 are compared for the preceding years, with those of cheese made in 1931 and in 1930 respectively; prices of 1933 cheese with those of cheese made in 1932 and 1931. The yearly averages refer to periods from Sept. to August. — 3) From May 1934 onwards: National Mark, selected. — 4) New make. — 5) New make: 53/8.

DESCRIPTION	14	7	31	24	AVERAGE				
	June	June	May	May	May	June	June	Commercial	
	1935	1935	1935	1935	1935	1934	1933	1934	1933
Eggs (fresh).									
Antwerp, auction: Belgian, average qual. (frs. p. 100)	34.00	34.00	30.00	29.00	29.80	31.40	32.40	42.80	48.40
Denmark (a): Danish for export (crs. per quintal)	76.00	76.00	76.00	72.00	64.00	71.60	79.20	103.60	105.85
Roermond, auction: Dutch, 57/58 gr. each, white (fl. p. 100) 1):	...	...	...	...	...	3.22	2.25	3.96	3.48
Fixed price for export into Germany. Price for other destinations . . . . .	...	...	...	...	...	2.20	2.25	3.34	3.48
Warsaw (b): Polish, average weight 50 gr. each, different colours (zloty p. 1440, including box) . . . . .	...	...	72.00	68.50	69.30	83.83	100.00	106.50	123.60
Berlin (c): German, big, new laid (Rm. p. 100):	...	...	...	...	...	...	...	...	...
marked "GIS", 65 gr. each	9.00	9.00	9.00	9.00	9.00	9.25	8.75	10.37	10.41
marked "GIB", 55/60 gr. each	8.00	8.00	8.00	8.00	8.00	7.75	6.97	9.03	9.05
London, Egg Exchange (d) (sh. p. great hundred):	...	...	...	...	...	...	...	...	...
English, National mark, specials	13/-	13/-	12/6	11/-	10/11	12/5 1/2	12/10 1/2	15/5	13/10 1/4
Belgian, 25 1/2 lb. p. 120	7/9 3/4	7/7 1/2	7/7 1/2	n. q.	n. q.	n. q.	8/3 1/2	* 11/0 3/4	* 11/1
Danish, 18 lb. p. 120	9/10 1/2	9/10 1/2	9/10 1/2	9/1 1/2	8/11 1/2	9/11 1/2	9/10	12/5 1/2	12/9 1/2
North Irish, 18 lb. p. 120	12/-	12/-	12/-	10/7 1/2	10/5 1/2	11/2 1/4	11/4 1/2	* 12/9 1/2	15/1
Dutch, all brown, 18 lb. p. 120	10/4 1/2	10/3	10/1 1/2	9/6	9/6	10/11 1/2	11/6 1/2	13/5	* 14/0 1/2
Polish, 51/54 grams each 2)	5/9	5/9	5/10 1/2	5/8 1/4	5/8 1/2	5/7	5/11	6/10 1/4	* 7/4 1/4
Chinese, violet	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	* 8/3 1/4	* 9/10
Australian, 16 lb. p. 120	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	* 11/5 1/4	* 12/4 1/2
Maritime freights 3).									
Shipments of Wheat and Maize.									
								1935-34 b)	1932-33 b)
Danube to Antwerp/Hamburg. (shill. per Black Sea to Antwerp/Hamb.) long ton)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	13/4 1/2	* 14/1	* 13/9
St. John to Liverpool 4)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	* 9/11	10/3	10/-
Port Churchill to United Kingdom	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	* 1/11	* 1/7
Montreal to United Kingdom. (shill. per 480 lb.)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	* 2/9	* 3/-
Gulf to United Kingdom 4)	2/6	2/6	2/6	2/6	2/6	2/6	2/-	* 1/4 1/4	* 1/8 1/2
New York to Liverpool 4)	1/6	1/6	1/6	1/6	1/6	1/6	1/6	2/6 1/2	2/-
Northern Range to U.K./Cont.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	* 1/9	* 0/6
North Pacific to United Kingdom (sh. per long ton)	16/-	16/-	16/-	16/-	16/6	n. q.	17/2 1/2	20/1	20/10
Vancouver to Yokohama 4) (U.S.A. \$ p. short ton) 5) . . . . .	...	...	...	...	...	2.25	1.75	2.41	1.98
La Plata Down River 6) /Bahia Blanca to U.K./Continent	10) 15/9	10) 15/9	10) 15/9	10) 15/9	10) 15/9	14/9 3/4	13/9	14/1	14/-
La Plata Up River 7) /Necochea to U.K./Continent	10) 17/-	10) 17/-	10) 17/-	10) 17/-	10) 17/-	16/1	15/6 1/2	15/9	15/10
Western Australia to U.K./Continent	24/-	24/-	24/-	24/-	23/8 1/4	24/0 1/2	n. 21/3	23/10 1/4	24/6 1/2
Shipments of Rice.									
								1934	1933
Saigon to Europe (shill. per Burma to U.K./Continent . . . long ton)	n. 20/-	n. 20/-	* 20/-	* 20/-	* 20/-	n. 23/9	n. 21/10	24/2 1/4	23/5 1/2
	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	* n. 23/-	* 23/3	* 23/1 1/2

* Indicates that the product or the maritime freight, during part of the period under review, was not quoted. — n. q. = not quoted. — n. = nominal. — a) Average prices for weeks beginning on Fridays indicated. — b) Average prices for weeks beginning on preceding Mondays. — c) Thursday prices. — d) Prices of preceding Monday.

1) See note on p. 307 of the *Crop Report* of April 1934. — 2) From Nov. 1933, 51/52 grams each. — 3) Rates for entire car goes; see note on p. 307 of the *Crop Report* of April 1934. — 4) Rates for parcels by liners. — 5) May-Oct. 1934 and from 25 Jan. 1935: Canadian \$. — 6) "Down River" includes the ports of Buenos Aires, La Plata and Montevideo. — 7) "Up River" includes the ports on the Paraná River as far as San Lorenzo. Cargoes from ports beyond San Lorenzo (Colastine, Santa Fé and Paraná) are subject to an extra rate of freight. — 8) August-July. — 9) Freight in U. S. A. \$ per 100 lb. — 10) Minimum rates, see notes on p. 247.

EXCHANGE RATES

RELATION OF VARIOUS CURRENCIES TO THEIR PARITY WITH THE SWISS FRANC (1)

NATIONAL CURRENCIES	Exchange rates				Percentage bonus (+) or loss (—)			
	14 Juin 1935	7 Juin 1935	31 May 1935	24 May 1935	14 Juin 1935	7 Juin 1935	31 May 1935	24 May 1935
Germany: free reichsmark.	123.500	124.250	124.625	124.350	— 0.0	+ 0.6	+ 0.9	+ 0.7
Argentina: paper peso †)	94.781	95.000	95.937	95.387	— 56.9	— 56.8	— 56.4	— 56.6
Belgium: belga.	51.900	51.950	53.200	52.325	— 0.0	+ 0.1	+ 2.5	+ 0.8
Canada: dollar	3.060	3.060	3.095	3.092	— 41.0	— 41.0	— 40.3	— 40.3
Denmark: crown	67.750	67.350	68.350	68.250	— 51.2	— 51.5	— 50.8	— 50.9
Spain: peseta	41.900	42.050	42.250	42.250	— 58.1	— 58.0	— 57.8	— 57.8
Egypt: pound 2)	15.165	15.200	15.350	15.262	— 39.9	— 39.7	— 39.1	— 39.5
United Kingdom: pound sterling	3.069	3.058	3.100	3.096	+ 0.3	— 0.1	+ 1.3	+ 1.1
United States: dollar	20.215	20.225	20.372	20.377	— 0.4	— 0.4	+ 0.3	+ 0.4
France: franc	57.250	57.000	55.500	54.750	— 36.8	— 37.1	— 38.8	— 39.6
Indo-China: piaster 3)	114.496	114.887	115.892	115.228	— 39.5	— 39.3	— 38.7	— 39.1
Hungary: pengö 4)	25.275	25.362	25.500	25.450	— 7.3	— 7.0	— 6.5	— 6.7
India: rupee †)	89.473	89.680	90.565	89.791	— 65.4	— 65.3	— 64.9	— 65.2
Italy: lira	207.450	207.250	208.875	209.125	— 0.4	— 0.5	+ 0.3	+ 0.4
Japan: yen †)	57.875	57.875	58.300	58.300	— 0.5	— 0.5	+ 0.3	+ 0.3
Netherlands: florin	3.100	3.100	3.100	3.100	0.0	0.0	0.0	0.0
Poland: zloty	78.150	77.750	79.075	78.750	— 43.7	— 44.0	— 43.1	— 43.3
Rumania: leu	12.800	12.810	12.900	12.895	0.0	+ 0.1	+ 0.8	+ 0.8
Sweden: crown								
Czechoslovakia: crown								

1) The exchange rate represents the value of 100 units of the national currency (for the dollar and the pound sterling 1 unit) expressed in Swiss francs, as far as possible on the Zurich Exchange. With regard to the currencies marked thus (†) a conversion has been made; the original exchange rates on London being converted into Swiss francs by means of the rate of the £ in Zurich. — 2) As the relation between the Egyptian pound and the pound sterling remains unchanged, the exchange rate of the latter only is given. — 3) As the relation between the Indo-Chinese piaster and the French franc changes only slightly, the exchange rate of the latter only is given. — 4) Bank notes.

VARIATIONS IN THE INDEX-NUMBERS OF PRICES

On the following pages the index-numbers of prices of agricultural products and other price-indices of interest to the farmer are given as published in the different countries.

Owing to the substantial divergence, which often exists in the value and significance of the data available, it has been considered opportune to reproduce all the data in their original form, without attempting formally to unite them.

In addition to the original data summary tables are given below.

Percentage variations in the index-numbers for May 1935

COUNTRIES	Comparison with April 1935		Comparison with May 1934	
	Index-numbers of prices of agricultural products	Index-numbers of wholesale prices in general	Index-numbers of prices of agricultural products	Index-numbers of wholesale prices in general
Germany	+ 0.6	0.0	+ 9.9	+ 4.8
England and Wales	+ 7.1	+ 1.0	+ 0.9	+ 5.0
Argentina	— 0.6	—	+ 4.8	—
Canada	— 0.9	— 0.3	+ 12.7	+ 1.7
United States: Bur. of Agric. Economics	— 2.7	—	+ 31.7	—
United States: Bur. of Labor	+ 0.2	+ 35.2	+ 0.1	+ 9.4
Finland	— 1.3	+ 2.8	+ 8.0	+ 1.1
Hungary	+ 1.4	+ 0.0	+ 8.5	+ 3.6
Italy	+ 1.0	+ 1.9	+ 15.4	+ 11.0
New Zealand	— 1.7	—	+ 5.4	—
Netherlands	0.0	+ 1.4	— 13.8	0.0
Poland	+ 2.9	+ 1.1	— 6.7	— 5.7
Yugoslavia:				
plant products. . . . .	...	...	...	...
livestock products . . . . .	...	...	...	...

INDEX-NUMBERS OF PRICES OF AGRICULTURAL PRODUCTS AND OF COMMODITIES BOUGHT BY THE FARMER ¹⁾

DESCRIPTION	May	April	March	Feb.	Jan.	Dec.	May	May	Year	
	1935	1935	1935	1935	1935	1934	1934	1933	1934	1933
Germany										
(Statistisches Reichsamt)										
1913 = 100.										
Foodstuffs of plant origin	114.5	114.1	114.1	113.8	113.2	112.9	105.7	99.4	108.7	98.7
Livestock	80.6	79.2	76.7	74.9	76.2	76.8	65.0	59.2	70.9	64.3
Livestock products	103.3	103.1	102.8	107.2	108.8	109.5	100.1	93.2	105.0	97.5
Feeding stuffs	104.6	104.8	105.2	105.0	105.2	105.0	98.5	84.2	102.0	86.4
Total agricultural products	100.6	100.0	99.3	99.7	100.3	100.5	91.5	84.2	95.9	86.8
Fertilizers ¹⁾	65.1	67.3	67.3	67.3	67.0	65.3	69.1	71.2	68.6	70.2
Agricultural dead stock	111.1	111.0	111.0	111.0	111.0	111.0	111.2	110.9	111.1	111.6
Finished manufactures ("Konsumgüter")	123.9	124.1	124.4	124.5	123.5	122.5	115.6	109.9	117.3	111.7
Wholesale products in general	100.8	100.8	100.7	100.9	101.1	101.0	96.2	91.9	98.4	93.3
England and Wales										
(Ministry of Agriculture and Fisheries)										
Average for corresponding months of 1911-13 = 100.										
Agricultural products ²⁾	117	126	119	122	124	120	116	105	119	111
Feeding stuffs	88	90	92	92	98	98	82	85	91	85
Fertilizers	89	88	88	88	88	89	91	91	90	90
Wholesale products in general ³⁾	100.2	98.9	97.5	98.1	98.4	97.4	95.4	95.2	96.3	93.7
Argentina										
(Banco de la Nación Argentina)										
1926 = 100.										
Cereals and linseed	64.8	66.7	65.9	65.1	68.8	71.1	62.3	54.2	68.1	54.4
Meat	77.8	77.9	78.5	79.1	82.1	83.5	76.2	65.0	78.5	65.9
Hides and skins	80.8	77.8	74.4	74.4	75.4	73.0	68.7	72.3	71.6	63.9
Wool	70.0	65.4	64.4	65.7	68.0	68.3	84.7	49.6	84.3	54.6
Dairy products	75.8	75.0	75.8	75.9	66.8	66.4	61.4	48.4	62.3	57.4
Forest products	92.8	92.8	91.9	91.9	84.4	87.9	70.9	71.8	73.1	72.5
Total agricultural products	69.3	69.7	69.0	68.5	71.1	72.5	66.1	56.7	70.5	56.9
Canada										
(Internal Trade Branch of the Dominion Bureau of Statistics)										
1926 = 100.										
Field products (grain, etc.)	58.0	59.8	56.4	55.7	55.7	56.0	51.1	46.9	53.9	45.7
Livestock and livestock products	74.4	72.9	73.3	72.6	71.0	70.9	66.5	58.3	67.6	59.6
Total Canadian farm products	64.1	64.7	62.7	62.0	61.4	61.6	56.9	51.2	59.0	51.0
Fertilizers	75.8	75.8	75.8	75.8	75.8	75.8	75.4	73.0	76.2	73.8
Consumers' goods (other than foodstuffs, etc)	75.6	75.7	76.1	76.7	76.7	76.7	76.9	75.1	77.2	76.0
Wholesale products in general	72.3	72.5	72.0	71.9	71.4	71.2	71.1	66.7	71.6	67.2

¹⁾ For an explanation of the method of calculation of the index-numbers, reference should be made to the Institute's publication *Index-numbers of Prices of Agricultural Products and other Price-indices of interest to the Farmer* (Rome, 1930) as well to the *Crop Report* (January 1932, pages 77 to 79; July 1932, page 502; March 1934, page 231; December 1934, page 696).

²⁾ Revised index-numbers due to the Wheat Act payments and, from 1st. September the Cattle Emergency Act payments. —

³⁾ Calculated by the *Statist*, reduced to base-year 1913 = 100.

DESCRIPTION	May 1935	April 1935	March 1935	Feb. 1935	Jan. 1935	Dec. 1934	May 1934	May 1933	Y 1934
United States (Bureau of Agricultural Economics) Average 1909-10 to 1913-14 = 100.									
Cereals	112	115	111	114	115	116	78	63	93
Cotton and cottonseed	105	103	102	108	108	109	90	65	99
Fruits	98	105	90	90	87	85	110	74	100
Truck crops (market garden crops)	127	156	162	188	117	130	89	89	102
Meat animals	118	117	117	105	96	73	64	65	68
Dairy products	108	117	114	121	112	107	91	78	96
Chickens and eggs	110	105	97	119	114	119	72	65	89
Miscellaneous	89	92	92	101	111	113	92	64	108
Total agricultural products	108	111	108	111	107	101	82	68	90
Commodities purchased 1)	128	128	127	127	126	126	121	102	122
Agricultural wages 1)	—	94	—	—	86	—	2) 88	2) 72	88
United States (Bureau of Labor) 1926 = 100.									
Cereals	83.2	87.9	82.8	87.4	88.8	91.5	63.9	52.8	74.5
Livestock and poultry	87.6	85.9	85.8	78.4	73.3	57.2	47.8	46.8	51.5
Other farm products	75.0	74.5	72.1	76.8	76.6	75.1	65.0	51.8	70.5
Total agricultural products	80.6	80.4	78.3	79.1	77.6	72.0	59.6	50.2	65.3
Agricultural implements	93.6	93.6	93.6	93.6	92.7	92.7	91.1	83.0	89.6
Fertilizer materials	65.9	66.0	66.3	66.2	66.5	65.3	66.4	66.8	67.1
Mixed fertilizers	73.1	72.9	72.8	72.8	73.3	75.4	73.2	63.1	72.5
Cattle feed	107.0	104.9	102.2	109.0	116.2	123.1	72.5	54.4	89.4
Non-agricultural commodities	80.0	79.9	79.5	79.4	78.9	77.8	76.6	65.4	76.9
Wholesale products in general	80.2	80.1	79.4	79.5	78.8	76.9	73.7	62.7	74.9
Finland (Central Bureau of Statistics) 1926 = 100.									
Cereals	79	79	79	80	80	79	82	91	82
Potatoes	84	81	81	81	68	56	49	95	49
Fodder	66	63	63	63	64	64	71	68	72
Meat	71	76	78	78	76	73	72	69	71
Dairy products	75	79	78	80	82	86	71	71	75
Total agricultural products	74	75	75	76	75	76	72	73	73
Wholesale products in general	90	90	90	90	90	90	89	88	90
Hungary (Central Bureau Statistics) 1913 = 100.									
Agricultural and livestock products	77	74	73	75	75	72	71	66	—
Wholesale products in general	86	86	85	86	86	84	83	79	—
Italy (Consiglio Provinciale dell'Economia Corporativa di Milano) 1913 = 100.									
National agricultural products	335.1	331.7	324.8	317.9	315.6	316.2	290.4	272.3	297.9
Wholesale products in general	304.4	298.7	289.4	281.5	280.2	279.2	274.3	282.2	275.8
New Zealand (Census and Statistics Office) Average 1909-13 = 100.									
Dairy products	80.2	77.6	87.1	87.6	77.8	78.3	74.9	77.3	77.5
Meat	152.8	162.1	162.5	163.7	162.5	163.6	151.7	107.5	152.2
Wool	77.5	78.3	80.1	78.1	79.5	75.0	114.2	56.7	110.0
Other pastoral products	84.5	86.8	92.1	79.9	76.1	77.9	93.8	55.1	80.2
All pastoral and dairy products	99.1	100.7	105.9	105.2	100.4	98.9	105.3	77.4	104.5
Field products	124.8	129.3	125.7	123.7	126.3	121.5	119.8	113.9	120.6
Total agricultural products	99.9	101.6	106.5	105.7	101.2	99.3	104.5	78.4	104.7

1) 1910-1914 = 100. — 2) April.

DESCRIPTION	May 1935	April 1935	March 1935	Feb. 1935	Jan. 1935	Dec. 1934	May 1934	May 1933	Year	
									1934-35 2)	1933-34 2)
Norway										
(Kegl. Selskap for Norges Vel)										
Average 1909-14 = 100.										
Cereals	143	144	144	144	141	137	100	116	126	112
Potatoes.	175	147	153	144	132	115	95	84	132	103
Pork.	90	93	93	89	88	88	71	79	83	81
Other meat.	142	140	142	139	141	136	132	119	137	110
Eggs.	67	79	99	93	82	109	62	68	92	85
Dairy products.	137	135	134	133	133	133	130	119	132	126
Concentrated feeding stuffs	113	117	115	118	120	121	100	98	109	96
Maize.	99	101	101	108	110	110	84	85	101	83
Fertilizers.	78	78	77	76	74	74	88	92	81	87
Netherlands										
(Bureau of Agriculture)										
Average 1924-25 to 1928-29 = 100.										
Plant products.	56	54	52	54	54	55	64	38	59	42
Livestock products.	47	49	48	48	49	49	55	51	53	51
Total agricultural products.	50	50	49	49	50	51	58	48	55	49
Agricultural wages	69	71	71	71	71	71	71	74	74	81
Wholesale products in general 1).	52.1	51.4	50.7	52.1	52.8	52.8	52.1	48.7 4)	52.8 4)	50.1
Poland										
(Central Bureau of Statistics)										
1928 = 100.										
Raw plant products	38.9	34.0	33.2	33.9	33.1	33.2	34.8	46.3	35.6	41.1
Meat animals.	30.9	31.0	31.6	29.8	29.5	32.5	35.6	43.4	36.7	42.5
Dairy products and eggs	36.3	39.3	37.7	39.0	40.4	43.3	38.4	43.0	41.2	46.7
Products directly sold by farmers	35.8	34.0	33.5	33.3	33.3	34.8	35.7	44.7	37.0	42.6
Flour and groats.	38.2	38.4	37.7	38.4	38.3	38.8	35.8	51.8	38.8	47.8
Meat and lard fat	36.0	33.8	34.6	33.5	34.9	36.7	46.1	52.0	43.5	49.8
Sugar, alcohol, beer	79.2	79.3	79.1	79.3	85.6	85.6	90.1	90.2	88.6	90.3
Products of agricultural industries	50.8	50.2	50.2	50.1	52.6	53.4	57.2	64.5	56.7	62.4
Total agricultural products.	43.2	42.0	41.8	41.7	42.8	44.0	46.3	54.5	46.8	52.4
Commodities purchased.	66.9	67.0	67.0	67.1	67.8	68.5	71.7	72.6	70.6	72.9
Wholesale products in general.	52.8	52.2	52.1	52.2	52.7	53.5	56.0	59.6	55.8	59.1
Yugoslavia										
(National Bank of the Kingdom of Yugoslavia)										
1926 = 100.										
Plant products.	—	58.9	61.1	60.9	62.9	57.9	56.5	59.3	57.4	57.2
Livestock products.	—	56.3	55.2	57.1	58.6	55.8	55.2	55.2	55.4	57.1
Industrial products	—	65.3	64.8	66.0	65.4	64.9	69.6	71.8	67.4	70.8
Wholesale products in general.	—	62.9	63.0	63.9	64.4	62.3	64.1	64.9	63.2	64.4

1) Calculated by the the Central Statistical Bureau of the Netherlands, reduced to the base 1925-1929 = 100 — 2) Agricultural year: 1st April-31 March. — 3) Agricultural year: 1st July-30 June. — 4) Calendar year.

**RECIPROCAL PARITIES OF THE VARIOUS CURRENCIES IN WHICH THE PRICES ARE QUOTED
IN THE MONTHLY AND THE QUARTERLY PRICE REVIEWS (1)**

COUNTRIES	Unit of Currency	Germany	Argentina	Belgium	Canada (2)	Denmark Sweden	Egypt	Spain Switzerland	United (3)	France Indo China (4)	Great Britain	Hungary	India	Italy	Japan	Netherlands	Poland	Romania	Czechoslo- vakia
Germany	Reichsmark	1.000	0.561	11.898	0.238	0.889	4.819	1.235	0.403	6.080	0.979	1.362	0.653	4.526	0.478	0.593	2.123	39.825	9.648
Argentina	Paper peso	1.782	1.000	21.203	0.424	1.584	8.586	2.200	0.718	10.833	1.744	2.427	1.163	8.064	0.851	1.056	3.872	70.959	17.191
Belgium	Franc (2)	0.084	0.047	1.000	0.020	0.075	0.040	0.104	0.034	0.511	0.082	0.114	0.055	0.380	0.040	0.050	0.178	3.347	0.811
Canada	Dollar (3)	4.198	2.356	49.948	1.000	3.731	20.230	5.183	1.693	25.524	4.110	5.718	2.740	19.000	2.006	2.488	8.914	167.181	40.501
Denmark/Sweden	Crown	1.125	0.631	13.385	0.268	1.000	5.422	1.389	0.454	6.840	1.101	1.532	0.734	5.092	0.538	0.667	2.389	44.803	10.854
Egypt	Piastre	0.207	0.116	2.469	0.049	0.184	1.000	0.256	0.083	1.262	0.203	0.283	0.135	0.939	0.099	0.123	0.441	8.264	2.002
Spain/Switzerland	Peseta/Fr.	0.810	0.455	9.638	0.193	0.720	3.903	1.000	0.327	4.925	0.793	1.103	0.529	3.666	0.387	0.480	1.720	32.258	7.815
United States	Dollar (4)	2.479	1.391	29.500	0.591	2.204	11.948	3.061	1.000	15.074	2.427	3.377	1.618	11.221	1.185	1.469	5.265	98.737	23.920
France/Indo-China (5)	Franc	0.164	0.092	1.957	0.039	0.146	0.793	0.203	0.066	1.000	0.161	0.224	0.107	0.744	0.079	0.097	0.349	6.550	1.587
Great Britain	Shilling	1.021	0.573	12.154	0.243	0.908	4.923	1.261	0.411	6.211	1.000	1.391	0.667	4.623	0.488	0.605	2.169	40.680	9.856
Hungary	Pengő	0.734	0.412	8.736	0.175	0.653	3.580	0.905	0.296	4.464	0.720	1.000	0.479	3.323	0.351	0.435	1.559	29.240	7.084
India	Rupce	1.532	0.860	18.231	0.365	1.362	7.384	1.892	0.618	9.316	1.500	2.087	1.000	6.935	0.732	0.908	3.254	61.020	14.783
Italy	Lira	0.221	0.124	2.629	0.053	0.196	1.065	0.273	0.090	1.343	0.216	0.301	0.144	1.000	0.106	0.131	0.469	8.799	2.131
Japan	Yen	2.092	1.174	24.897	0.498	1.860	10.084	2.583	0.843	12.723	2.049	2.850	1.366	9.471	1.000	1.240	4.443	83.333	20.189
Netherlands	Florin	1.687	0.947	20.077	0.402	1.450	8.132	2.083	0.681	10.260	1.652	2.298	1.101	7.637	0.806	1.000	3.583	67.200	16.280
Poland	Zloty	0.471	0.264	5.603	0.112	0.419	2.269	0.581	0.190	2.863	0.461	0.641	0.307	2.131	0.225	0.279	1.000	18.755	4.543
Romania	Leu	0.025	0.014	0.299	0.006	0.022	0.121	0.031	0.010	0.153	0.025	0.034	0.016	0.114	0.012	0.015	0.053	1.000	0.242
Czechoslovakia	Crown (6)	0.103	0.058	1.233	0.025	0.092	0.499	0.128	0.042	0.630	0.102	0.141	0.067	0.469	0.049	0.062	0.220	4.127	1.000

(1) Each quotation shows the par-value of the monies named in the column headed "Unit of currency," calculated in terms of the currency of the Countries printed in the heading. — (2) From 31 March 1935 the franc represents only 72 % of its previous gold value. — (3) Till 31 January 1934 also parity of the United States. — (4) New parity as from 31 January 1934. — (5) One gold piastre equals 10 francs. — (6) From 17 February 1934 the crown represents only $\frac{1}{16}$ of its previous gold value.

AGRICULTURAL SCIENCE AND PRACTICE

MONTHLY BULLETIN

OF

AGRICULTURAL SCIENCE AND PRACTICE

EDITORIAL

FATS AND THEIR USES

Without taking into consideration the fats obtained from marine animals, it may be said that the world requirements in fats are provided for by the work of farmers. These requirements are of enormous importance at the present time. It is not only a question of assuring a primary place for fats in the provision of hydro-carbonate foods for man, but also a wide field is open to numerous industrial uses in the preparation of non-alimentary products. The many vegetable and animal oils and fats enter into both these cases.

Over and above the qualities belonging to each product, the choice of consumers is inevitably influenced by prices, and it is here that the problem becomes complicated and serious. In fact, the increasing tendency, in human food and in industrial uses, is to partially or completely replace the traditional fats by products which are lower in price, provided that their quality is satisfactory.

Among the fats, the markets of which are threatened, the first which may be cited are butter and lard which have to enter into competition with vegetable oils and fats and, to a lesser degree, whale oil.

This fact, so serious for countries where butter making and pig breeding are practiced on a large scale, was recently made clear by the International Commission of Agriculture. In adopting the views and conclusions of an important report by Dr. LAUR, Director of the Swiss Union of Peasants on the « Organisation of production and marketing of food fats », this Commission proposed, among other things, that the Governments should encourage the consumption of butter and lard and should limit the use of vegetable oils and fats, whale oil and margarine. The first of these recommendations is logical and should be supported as no problem of over-production can be solved except by an increase in consumption.

However, when the recommendations are directed towards the prevention of the utilisation of vegetable oils and fats, we are obliged to make the most explicit reservations on the wisdom of measures tending to favour the marketing of certain agricultural products to the detriment of other products of an equally agricultural nature. The interests of farmers in all parts of the world should be equally respected and, considering the problem from an international standpoint, we think that our rôle should be primarily to inform the public on the present state of production and the possibilities of utilising the products in question.

An article appeared in the December 1934 number of the *Monthly Bulletin of Agricultural Economics and Sociology* by M. H. BÖKER on « Present day tendencies of production and consumption of margarine ».

The study which is published today is entirely from the technical view point. It is essential, in fact, to have a clear idea of the definition, preparation, value and use of a product which has been so much discussed and on which there has been so much legislation.

The restrictions imposed in various countries on the sale of substitutes for butter have not been decided upon without serious reasons, but it going rather too far to condemn wholesale and without appeal the use of margarine for human food. The incidences of its manufacture are, in fact, very important and often disregarded. It appears to us to be advisable to shed a little light on this question which has been the subject of such heated controversy and which from an agricultural, industrial, hygienic and fiscal point of view is at present of the greatest interest.

Prof. Georges RAY.

ORIGINAL ARTICLES

OLIVE-GROWING IN VARIOUS COUNTRIES (2) ITALY *

In Italy, which is essentially an agricultural country, a very large amount of the total area is devoted to olive-growing. Italy occupies the second place among the olive-growing countries in the world as much for the extent of the olive-groves as for the production of olive oil. However, since the end of the last century until the last few years Italian olive-growing has declined to a certain extent, due to a number of causes, such as; economic reasons, parasites, destructive cutting of the trees, abandonment of this form of cultivation for others which are more remunerative or give a more rapid return, competition from seed oils and other vegetable and animal fats, the facilities given to importation of oils from abroad for refining, the unsufficient suppression of fraud, the authorisation of mixtures, the disorganisation of the markets. At present, however, there is a revival in this form of cultivation, which affects millions of Italians, through various means, the effects of which necessarily will not be felt until a much later date.

According to the data last furnished by the *Federazione Nazionale dei Consorzi per l'Olivicoltura* this cultivation occupies 2 124 650 hectares, of which 807 500 are cultivated with olives alone and 1 317 150 with olives and various herbaceous plants and bushes. It is calculated that the yield in oil obtained from a hectare

* The first article of this series, concerning Spain, appeared in No. 12 of this *Bulletin* for 1934, pp. 536-513.

cultivated with olives in conjunction with other plants corresponds to one third of the yield obtained from the same area cultivated with olives alone. From this estimate it may be said that the present production of oil is equal to that which could be obtained from 1 246 550 hectares cultivated only with olive trees. The number of trees in bearing is calculated at 154 millions.

The average production of olives during the years 1929 to 1933 has been 12 $\frac{1}{2}$ millions of quintals per annum from which 2 148 000 quintals of oil have been extracted, the average yield of olives in oil being about 17 %.

The principal centres of cultivation and production are in Puglia, (27 $\frac{1}{2}$ of the total production), Calabria (18 %), Sicily (14 %), Tuscany (8 %), Lazio (7.5 %) the Abruzzi (7.2 %). It will be seen therefore that olive-growing is chiefly to be found in the south of Italy where the area cultivated in olives alone amounts to 76 % of the total area devoted to olive-growing. In fact, in southern Italy 592 000 hectares are cultivated with olives alone and 512 000 with olives and other plants, while in central Italy only 74 000 hectares are confined solely to olives and 498 thousand hectares to mixed cultivation. In the islands 248 thousand hectares are under mixed cultivation and 96 thousand with olives only while in the north of the country mixed cultivation occupies 47 thousand hectares and 50 thousand are devoted to olives alone.

The production of olives for direct consumption amounts to 100 000 quintals per annum, showing a visible diminution.

The varieties of olives grown are very numerous, but the study of them presents serious difficulties on account of the confusion and uncertainty that still exists in identifying them. In fact, the same variety is known by different names according to the district and also different varieties are known by the same name within certain regions. Professor FRANCOLINI (*Olivicoltura*, Turin 1923, 229 pp.) describes more than 80 varieties for oil extraction and more than 12 for table consumption.

In September 1930, the Società Nazionale degli Olivicultori (National Society of Olive-growers) proposed to the Ministry of Agriculture to nominate two Commissions, composed of the Directors of all the Institutions and Stations of Olive-growing and by the representatives of the Society of Olive-growers, for the study of varieties of olives existing in the country, those for oil extraction as well as those for table consumption. This proposition was approved by the Ministry which also facilitated in every way the carrying out of this project.

The work of these Commissions was aided by the collaboration of the Consorzi Provinciali degli Olivicultori, the Travelling Chairs of Agriculture and the Provincial Fascist Federations of Agriculture. To begin with a complete analysis was made of the fruit and oil obtained from each variety to establish the characteristics and to be able to compare them with those of other districts (more than 100 complete analyses were made), afterwards a study was made of the botanical, cultural and ecological characters of each variety, summarising all the data obtained in oleographical tables. In order to facilitate this work the oil producing territory was divided into 8 zones the study of each of these zones being confided to two members of the Commissions. More than 130 varieties were identified, 60 of which it was possible to describe in detail.

The olive tree is cultivated in association with the vine, almond, fig and carob and in Sicily with the fig, prickly pear and citrus fruits, though, in general, it is cultivated with various herbaceous and gramineous plants and potatoes. In many places grass is laid down for feeding sheep in winter.

In Italy 60 % of the olive groves are found in hilly districts. In winter the soil is deeply ploughed once or twice and in summer it is harrowed in order to keep the ground soft. Manures have been more generally applied during the last few years: farm manure, various organic substances, green manure and chemical fertilisers all being employed.

Methods of pruning differ according to districts and the exigencies of the variety though the forms most generally used are vase pruning and pyramid pruning. This operation, based on the physiological and biological characters



Olive plantation without intercalary cultivation in the province of Cagliari (Sardinia).



Fine specimen of olive tree well manured and pruned; province of Cagliari (Sardinia).

of the olive, has made much progress thanks to the diffusion of agricultural instruction through the Provincial Syndicates of Olive-growers and the Travelling Chairs of Agriculture by which farmers have been instructed how to carry out this practice. As will be seen later it is chiefly to the Syndicates of Olive-growers that merit is due for the improvement in the technique of olive-growing, particularly with regard to the rational use of fertilisers, pruning, grafting, clearing and rejuvenation of the olive groves and the control of parasites and diseases. These nuclei of the Central Federation of Olive-growers are developing a complete plan of activity in order to arrive at an increase in olive production which is at present insufficient to supply the necessities of internal consumption, and the export trade, and to improve fundamentally the quality of the oil.

In Italy irrigation is not applied to olive-growing though some experiments have been carried out in the district of Bari which appear to have given good results.

The Decree of 31 December 1923 exempted new olive groves from land taxes for a period of 25 years and the Law of 14 June 1934 also accorded exemption

from taxes for 10 years to rejuvenated olives. For the rejuvenation of olives all those operations are carried out, in addition to the ordinary cultivation, which tend to rejuvenate the roots, trunk and branches of the tree and should be carried out according to a plan previously approved by the local Travelling Chair of Agriculture. Moreover, olive growing is being greatly encouraged in Tripolitania, a colony which possesses vast areas suitable for this branch of cultivation.

The production of oil in Italy has shown a diminution until 1925 when it began to slowly augment owing to the activities of the Fascist Government.

The production and trade in food oils are subject to strict regulation. The Decree of 15 October 1925 regulated the suppression of frauds and in the oil trade the denomination « oil » and « olive oil » is reserved exclusively for the product of the olive without the addition of any other substance or any other class of oil (*).

The Law of 12 May 1930 prohibited the artificial colouring of seed oils also the admixture of olive oils with any other edible vegetable oils and the Law of 10 March 1931 established, *inter alia*, the obligation to add to edible residue oils 5% of sesame oil of characteristic chromatic reaction.

For the improvement of oil production it has been made compulsory to preserve the olives in suitable places in order to avoid fermentation and it is forbidden to use olives that are not in a perfect state of preservation.

The processes of manufacture do not differ essentially from those in other advanced oil producing countries. The oil mills have been modernised to a large extent, mechanical mills for the extraction of natural oil have been adopted and hydraulic presses and metal cages. Special notice must be taken of the increase in the use of centrifugal apparatus for the instant separation of the oil from the waters of vegetation also the preservation of the olives in stacks of wicker trays is becoming more general and glass or cement receptacles, lined with oil-proof material, for conserving the oil.

The oil producing industry still keeps its character as a small rural industry except in certain regions (Puglia, Liguria). It is estimated that there are about 9400 oil mills, of which 7600 are worked by animals and 1800 by mechanical means. There are 93 establishments for oil extraction by means of solvents, 74 of which use carbon disulfide, 5 trichloride of ethylene, 2 benzine and 12 by means of washing. The number of private co-operative societies amounts to 50, with a membership of 23 000. Their aim is the protection, both from a technical and economic view point, of the olive and its products and by-products.

Olive oil is obliged to compete with seed oils, with refined residue oil, with the tax-free imports of olives from abroad and with various other vegetable and animal fats. The production of seed oil which in 1914 hardly amounted to 250 000 quintals per annum, rose to a maximum of more than a million quintals in 1932, though in the last two years a visible diminution has taken place owing to proposals made by the Federation of Olive-growers. Moreover, since 15 August 1934, a quota has been imposed on the importation of oil producing seeds.

(*) See this *Bulletin* 1933, No. 8, p. 345.

By the Royal Decree-Law of 20 September 1934, the tax on the manufacture of vegetable and animal fats, with the exception of unsalted pork fat and its admixtures provided that it is added to natural butter and is to be used as a substitute, was established at the rate of 3,50 lire per kilogramme. Another Decree of the same date raised the tax on the manufacture of seed oils from 65 to 120 lire per quintal.

By the Decree of 16 April 1934 the import duties on olive oil were raised from 176,16 to 209,70 lire per quintal. Another Decree of the same date prohibited the sale for alimentary purposes of various animal fats used as substitutes for butter.

The refining of oils has progressed to a high standard. The French and Italians initiated this process at the beginning of the present century and in the years immediately after the war a great development took place in this operation. At that time the refineries which rectified the oil of bad quality from unsatisfactory mills were able to maintain a large export trade in this product to the world markets. The tendency today, however, is increasingly directed towards the obtaining of natural oils.

Residues are employed for the extraction of oil by solvents, though they are also used for feeding cattle either in the natural state or after the oil has been extracted. The soap industry until a short time ago absorbed large quantities of residue oil, though at present they prefer other substitutes the price of which is lower.

The question of the use of olive oil as a lubricant has aroused great interest. The increase in up-to-date methods of cultivation, the new technique of the Diesel engine applied to automobiles and railway engines, the use of motors in the army, etc., has created a demand for fuels and liquid lubricants which is increasing every day. For this reason, the Italian Government instituted a technical Commission at the Consiglio Nazionale delle Ricerche (National Council for Research) presided over by Sr. PARRAVANO for the study of this problem. This Commission is composed of representatives of the Ministries of Agriculture, Corporations, Finance, National Defence and Communications, also of the National Federation of Olive-growers, the Comitato di Mobilitazione Civile (Committee for Civil Mobilisation) and various scientific Institutions.

The centres for experimentation and investigation in olive-growing are: the R. Stazione Sperimentale di Olivicultura e Oleificio of Pescara, the Istituti Oleari of Spoleto and Imperia, also the Scuola Specializzata of Pescia. The expenditure of this centres is provided for by the Ministry of Agriculture and the local Consorzi. There are also independent experimental olive groves, oil mills and up-to-date laboratories where the various problems are studied relative to olive-growing and the oil industry. Moreover, by courses of lectures to olive-growers the best methods of cultivation are made known; pruning, grafting, the control of parasites and diseases, harvesting, transport and treatment of the olives. In the Annali published by these Centres the work carried out is described and the results obtained. Pamphlets on a number of special questions are distributed among the olive-growers, lectures are given and the best varieties for growing in different regions are recommended to growers.

Persons engaged in the production of and trade in olive oils are grouped in organisations of category through the syndical and corporate organisations of the State.

Producers are united in the Federazione Nazionale dei Consorzi per la Olivicultura with headquarters in Rome, Via Vittorio Veneto, 7, which centralises and controls the activities of the Consorzi Provinciali Oleari. A technical and economic review is published monthly entitled, «L'Olivicoltore» and a fortnightly supplement entitled «Il Mercato Oleario» which reports the situation of the national and international oil markets.

Persons or organisations engaged in the production of oil for third parties or who produce oil for themselves from olives purchased from a third party are grouped in the Federazione Nazionale Fascista delle Industrie diverse.

Producers of refined oils are united, from the syndical point of view, in the Federazione Nazionale delle Industrie Chimiche with headquarters at Milan, Via S. Paolo, 10. An extensive and interesting review is published monthly entitled «Giornale di Chimica Industriale ed Applicata».

Traders and exporters form part of the Federazione Nazionale Fascista del Commercio Oleario in which are also grouped traders in machines and other products employed in olive production. The headquarters of the Federation is in Rome, Piazza Sidney Sonnino, 2. A fortnightly periodical is published entitled «Il Commercio Oleario». At one of the last meetings this Federation agreed to institute collective contracts for the purchase and sale of oils in order to improve the regulation of the internal oil-trade.

The compulsory provincial Consorzi of olive-growers, whose activities are regulated by the Laws of 12 August 1927 and 18 June 1931, have as their object the encouragement of olive-growing, the renewal of worn-out groves, the installation of depots or stores for the sale of products direct to the consumer, the control of the edible quality and purity of the oils and their classification, and the control of diseases and pests, also the formation of nurseries and experimental groves according to the directions of the Ministry of Agriculture. They also have the power to introduce improvements which are considered necessary for the development of the oil industry and the production of table olives and for the organisation of the trade and export of products of the olive.

These Consorzi have the right to impose on each grower a contribution of not more than 10 centesimi per tree in bearing.

The Ministry of Agriculture has granted subsidies for the installation of up-to-date oil mills, also prizes and bursaries for the study of olive-growing in order to encourage research in this branch of cultivation and its respective industries.

All members of the Consorzi are obliged to carry out an effective control of diseases and pests of the olive, to rejuvenate their groves and to employ the improved systems of cultivation. At present there are 27 of these Consorzi and 6 more are in process of formation.

As the oil question is so closely bound up with the vital interests of vast regions in Italy, the Fascist Government decided on 10 November to form the Corporazione Olearia in which are grouped and controlled all the organisations and activities which, directly or indirectly, are related to this important problem

in the economy of the country. The aims of this Corporation may be summed up thus: (1) establishing conditions for the collective regulation of economic relations and for the integral control of production; (2) regulation of relations between the olive oil industry and the seed oil industry; (3) propaganda in the foreign markets and protection of Italian oil against frauds and adulteration; (4) examination of the suitability of an official classification of olive oils; (5) establishing collective labour contracts for the various regions.

The oil produced in Italy is consumed almost entirely in the country. The export trade is assured by imports amounting to more than 200 000 quintals per annum, duty free at the port of entry and on a temporary basis, which increases the quantities available for exportation. The average quantity of olive oil available for internal consumption fluctuates round 2 millions of quintals per annum or less than 5 kg per capita, the production being thus inferior to internal requirements it is supplemented by seed oil the production of which from 1929 to 1933 amounted to 900 000 quintals annually. The average production of inedible olive oil (washed in carbon disulphide) amounts to 400 000 quintals about half of which is exported, the United States absorbing 80 % of the exports.

The principal markets of export for edible olive oil are Argentina and the United States which absorb almost 75 % of the exports. The average exportation in the years 1930 to 1934 may be estimated at 400 000 quintals annually. The American markets take 80 % of this exportation (Argentina 45 % of the total, the United States 30 % and Brazil 5 %). The other principal markets for export are France, Great Britain, Germany, Switzerland, etc. The oil producing centres in Italy which chiefly work for the export trade are in Liguria and Tuscany.

Part of Italian oil is exported in tin plate containers the capacity of which varies according to the needs of the markets (generally $\frac{1}{2}$ to 25 litres). A large quantity is also exported in other receptacles such as cans, casks and jars. The finest qualities are exported in bottles of half a litre and one litre, also in flasks of various sizes.

Although the prices of olive oil at present show a slight diminution, Italy is the oil producing country in which the highest quotations are given for this product. In fact, in the last quarter of 1934, the average price of olive oil of good quality was as much as 500 to 565 lire the quintal or almost double the price given in other oil producing countries.

The present oil producing policy aims at obtaining a production of 3 $\frac{1}{2}$ millions of quintals per annum thus arriving at complete independence from foreign imports. In fact it appears to be a return to the golden age of olive growing in Italy, from 1879 to 1885, when the annual production of oil exceeded three millions of quintals and Italy was the first oil producing country in the world. To realise up to what point olive growing in Italy may be revived it will be necessary to wait until the effects of the methods applied by the Government and the various organisations interested during the last few years become more clearly apparent.

A. PASCUAL.

PRODUCTION OF SILK-WORM COCOONS IN BULGARIA IN 1934 *

Complete information is now available on the production of silk-worm cocoons in 1934.

Local as well as international economic conditions at the beginning of the season have been very unfavourable for silk-growing, the price of cocoons and silk being extremely low. Bulgarian silk-growers, however, have maintained the tradition of silk-worm breeding, all the more in that in Bulgaria the prices of cereals and the principal crops are equally low.

The following figures showing the production of cocoons in the last 5 years will give a clear idea of the situation:

TABLE I. — *Production of silk-worm eggs and cocoons from 1930 to 1934.*

Years	Silk-worm eggs used	Cocoons obtained
1930	43 654 ounces	2 265 275 kg
1931	21 161 »	1 109 581 »
1932	23 983 »	1 304 487 »
1933	25 657 »	1 363 624 »
1934	26 359 »	1 358 518 »

These figures show that the greatest production of cocoons was in 1930 at the beginning of the world crisis. The following year shows a great reduction, followed by a progressive increase which is to be attributed to the drop in the prices of cocoons and silk.

As will be seen from Table II, 26 359 ounces of eggs (of 3 gm) were produced during the silk-growing season of 1934, 20 027 being of the white breed and 6 332 of the yellow breed. These eggs produced 1 007 386 kg of white cocoons and 351 132 of yellow cocoons. The production of cocoons can actually be estimated at about 1 500 000 kg. On account of the prices of cocoons being too low, a large proportion were retained for the personal use of the silk-growers, and, as the breeding plots are rather small and dispersed, statistics do not exist.

In the south of Bulgaria the yellow breed of the country is bred and in the south-west chiefly the white breed of Baghdad.

Table II shows the distribution of production according to departments and provinces.

* For production of cocoons in 1933 see this *Bulletin* 1934, No. 2, p. 67-69 (N. d. R.).

TABLE II. — *Distribution of production in 1934
according to departments and provinces (*)*.

Former departments and provinces	Silk-worm eggs used, (in ounces)			Production of new cocoons, (in kg.)		
	white breed	yellow breed	total	white breed	yellow breed	total
Department of Vidin . . .	44	597	641	2 545	27 743	30 288
» of Vratza . . .	97	1 641	1 941	5 297	101 727	107 024
Province of Vratza	141	2 441	2 582	7 842	129 470	137 312
Department of Plevain . . .	80	1 296	1 376	4 030	80 999	85 029
» of Tirmovo . .	—	650	650	—	34 920	34 920
Province of Plevain	80	1 946	2 026	4 030	115 919	119 949
Department of Choumain . .	2	155	157	114	10 240	10 354
» of Roussees . .	183	543	726	10 632	29 802	40 434
» of Varna	—	95	95	—	5 850	5 850
Province of Choumain . . .	185	793	978	10 746	45 892	56 638
Department of Sofia	7	252	259	570	10 377	10 947
» of Kustendil . .	—	621	621	—	37 380	37 380
» or Petritsch . .	8	162	170	320	6 702	7 022
Province of Sofia	15	1 035	1 050	890	54 459	55 349
Department of Plovdiv . . .	3 284	32	3 316	174 642	1 607	176 249
» of Pachmakly . .	4	—	4	280	—	280
Province of Plovdiv	3 288	32	3 320	174 922	1 607	176 529
Department of St.-Zagora . .	1 230	22	1 252	73 674	912	74 586
» of Haskovo . .	11 355	1	11 356	582 280	45	582 325
» of Mastanly . .	3 493	9	3 502	138 279	350	138 629
Province of St.-Zagora . . .	16 078	32	16 110	794 233	1 307	795 540
Province of Bourgas	240	53	293	14 723	2 478	17 201
<i>Total . . .</i>	20 027	6 332	26 359	1 007 386	351 132	1 358 518

*) A new administrative division of the kingdom was adopted in 1934.

It will be seen that the greatest production of cocoons is to be found in the department of Haskovo; 582 325 kg of new cocoons being more than a third of the total production of the country. The cocoons belong almost entirely

to the white breed of Baghdad (Adrianople) and they are always considered to be the best cocoons in the Balkans.

In the neighbouring departments (Plovdiv and Mastanly) production is also fairly high. In these districts the plantations of mulberry trees are the best and extend over a considerable area. Silk-growing provides the principal source of income for the population.

The prices of cocoons, which vary between 18 and 28 *levas* (3 to 5 French francs), are rather low. The prices of eggs are from 50 to 75 *levas* (9 to 14 francs) per ounce of 30 gms. No bonus has been given by the State to either silk-growers or silk-worm egg producers.

V. KOJOUKHAROFF

Silk-growing Station of Vratza (Bulgaria).

TECHNICAL STUDY OF THE MARGARINE INDUSTRY

I. — INTRODUCTION

It is extremely difficult to give an exact definition of margarine, taking into account the changes which this product has undergone since the first year in which it appeared, 1870, until the present day. The inventor, Mège-Mouriez, was far from obtaining a margarine such as is now found on the market though it is to him that we owe the first satisfactory substitute for butter which afterwards gave rise to the great margarine industry. The process of manufacture is described in an English patent thus: —

« a fatty body, identical in chemical composition with butter, is obtained from fresh suet by crushing it between rollers under a stream of water, further washing it, and then digesting it with artificial gastric juice. The fat is extracted, melted, passed through a sieve, and poured into boxes to set, after which it is cut into pieces which are wrapped in cloths and pressed between hot plates. A fatty body is expressed, and may be agitated in a closed vessel, cooled, cut up, bleached with acid, and washed with water. This purified fat is mixed at animal heat with water containing small quantities of bicarbonate of soda, casein of cold milk, and mammary tissues along with yellow colouring matter. This is digested, allowed to settle, decanted, and cooled, and yields a preserved butter. Fresh butter is obtained by agitating the above mixture until a cream is formed, which is then treated as usual to obtain the butter » (1).

There have been many changes, not only in the process of manufacture, but also in the raw materials used. The first change in raw material was the substitution of a portion of the oleomargarine by lard, afterwards large quantities of butter were added and the product called "butterine" was obtained.

The introduction of vegetable oils was due to the necessity of utilising the unpressed oleo stocks. It was then necessary to mix the suets with fluid oils in

(1) Abridged Patent Specifications, Class 84, 2157 (1869).

order to arrive at a lower point of fusion. This introduction took place slowly from a commercial view point as, at the beginning, it was difficult to obtain cheap vegetable oils with an agreeable flavour, methods of refining not being yet known. In the United States cotton seed oil was the first to be introduced. As only a very sweet oil can be used in the manufacture of margarine, the oils employed at first were those which, cold pressed, are edible without refining, namely: nut oil, sweet almond oil, olive oil, sesame oil, hazel nut oil; later on, palm oil, cotton seed oil, coconut oil.

According to K. SNODGRASS, 4 types of margarine can be established after 1880 according to the raw materials used. In the period 1880-1900 there were 2 types, one consisting essentially of animal fats, the other composed of animal and vegetable fats. In the period 1900-1910 a third type appeared on the market, composed entirely of vegetable fats, chiefly coconut oil and palm kernel oil mixed with oils such as groundnut, sesame or cottonseed. After that period a fourth type appeared; hydrogenated oils and ordinary vegetable oils. The large increase in the use of vegetable oils must be noted. In Europe the use of animal fats is at present limited to the best qualities of margarine, while their use is general in the United States, and though fish oils and other fats of marine origin are employed to a certain extent in northern Europe, they are not employed in the United States.

At the present time in the United States, the name margarine or oleomargarine is applied to two principal types; « oleomargarine », which is a mixture of animal and vegetable fats in which oleo-oil predominates; and what is commonly known as « nut-margarine » which is prepared exclusively with vegetable oils, coconut oil being generally the principal ingredient. According to the law of the United States however all margarine should be called « oleomargarine » regardless of what materials are used.

From 1930 a great improvement took place in the manufacture of margarine from the biological point of view with the introduction of vitamins which completely changed the food value of this product.

KÖNIG defines margarine as follows: « Under the name of margarine must be included the preparations resembling fresh milk butter and melted butter the fat content of which does not originate exclusively from milk ».

The principal fats employed in the margarine industry from 1880 are as follows:

Animal fats: beef fat, pork fat (« lard »), mutton fat, butter, whale and seal oil.

Vegetable fats: oils of: cottonseed, sesame, groundnut, coconut, palm kernel, soya, colza, linseed, sunflower seed, etc.

II. — RAW MATERIALS EMPLOYED IN THE MARGARINE INDUSTRY

A. — Animal fats.

(1) "*Premier jus*". — Beef fat plays an important part in the manufacture of margarine and is considered superior to mutton fat on account of it not having a disagreeable odour. It is used in the preparation of oleomargarine.

The fat of the heart, kidneys and caul is chilled quickly to eliminate the animal heat, it is then melted and clarified at as low a temperature as possible (about 40° C). The clear fat which emerges is called "premier jus". It is granulated with or without clarifying treatment, such as washing in a solution of common salt. Afterwards it is put in bags and subjected to hydraulic pressure. The fat thus extracted has the consistency of butter and is used in the manufacture of animal margarine.

The residue from the sacks, which is in hard cakes, is called "oleostearin" or "beef stearin". The "premier jus" is a fairly hard fat of a yellowish colour, the melting point is about 47° C and the content in free fatty acid (calculated as oleic acid) is 0.50 %.

(2) *Oleomargarine*. — This is obtained from "premier jus" by compression, extracting the liquid part at a temperature of 20° to 25° C. Thus 50 to 60 % of oleomargarine is obtained and 40 to 50 % of stearin. Oleomargarine has a granular structure and is of a clear yellow colour. The melting point varies between 27 and 31° C and the content in free fatty acid (oleic acid) is between 0.3 and 0.5 %. The melting point and the content in acid vary according to the intensity and temperature during compression and to the origin of the raw material. There are a great number of different kinds of oleomargarine. It is prepared in enormous quantities of good quality by the slaughterhouses in America and is preferred as raw material for first quality margarines. Chemically it can be distinguished from other animal and vegetable fats by its high content in mixed glycerides of which the following have been separated by HANSEN:— oleodipalmitin, steardipalmitin, oleopalmitostearin and palmitodistearin. The general characteristic of beef fats is the acicular crystals in groups which are obtained from ethereal solutions.

(3) *Oleostearin*. — Oleostearin (compressed suet) is the solid part which remains after compression and the separation of the oleomargarine. Formerly it was only used in the manufacture of margarine to a limited extent and chiefly in order to keep the margarine firm during the summer months. At present its use is almost nil as solidified oils are used for that purpose. Oleostearin is hardly suitable as a raw material in margarine-making on account of the short time it can be preserved which is chiefly due to the quantity of albuminoid substances, etc., retained in the suet by pressure.

(4) *Mutton fat*. — Obtained in the same manner as beef suet. The separation into "oleo-oil" and stearin is only performed to a limited extent. In appearance and consistency it is almost identical with beef fat, but its strong odour of mutton prevents it being employed to any extent in the margarine industry.

(5) *Lard*. — Obtained by melting raw pork fat. The raw fat of the caul and kidneys are used as raw material. Lard from the stomach and back is used to a less extent. The great American slaughterhouses provide enormous quantities of good quality lard. There are on the market 4 principal kinds which vary greatly as to quality, namely:—

(a) "Neutral lard", obtained by fusing the fat of the caul with water at 40° C. It is pure white and tasteless, and is the best quality lard.

(b) " Leaf lard ", an imitation of " Neutral lard ", obtained from lard and lard refuse from the stomach and back by the same process as described above for " Neutral lard " which it resembles greatly though is much harder.

(c) " Choice kettle-rendered lard " is obtained from the caul by hot water or steam. Its quality is inferior to that of " Neutral lard ".

(d) " Steam lard " obtained from the residues and refuse of the manufacture of " Neutral lard " by means of the direct action of steam under pressure. The colour is greyish green and it has a coarse granular structure.

In the manufacture of margarine only the best kinds of " Neutral lard " and " Choice lard " are used. Lard is a most valuable raw material for the margarine industry as it imparts a consistency resembling butter.

(e) *Sea fish oils*. — These oils have been employed to a certain extent since the hydrogenation of unsaturated glycerides has been put on a commercial basis. They resemble animal fats in their content in cholesterol, the alcohol characteristic of animal fats. Fish oils are characterised chemically by the presence of fatty acids with many non-saturated linkages, among which is the clupanodonic acid $C_{17}H_{27}COOH$ to which many authors attribute the characteristic fishy taste and odour.

B. — Vegetable fats.

(1) *Groundnut oil*. — The best qualities are called Rufisque oil. It is obtained from *Arachis hypogaea*, which is grown in large quantities in tropical and sub-tropical countries, chiefly in North America ($\frac{1}{2}$ of the world total), Africa and India. The oil content of ground nuts varies between 30 and 52 % according to FRANZEN and between 43 and 48 % according to BOLTON. The yield in oil obtained by cold pressure is 18 %, it is colourless, has an agreeable odour and a nutty flavour and contains 0.1 % of free fatty acid (oleic acid). This oil can be used for food in the natural state. The oil from the second compression (under heat) can be used for burning and that from the third compression for soap-making. For margarine only the cold pressed oil is used and is an excellent raw material. Ground nut oil is golden in colour, but the edible oil is generally decolorised. At an ordinary temperature ground nut oil is liquid and forms a deposit of stearin at lower temperatures.

(2) *Cohune oil*. — Obtained from the kernels of the cohune palm (*Attalea Cohune*) which grows in Honduras, Brazil, Guatemala, Guiana and Mexico. The seeds contain 65 to 72 % of solid white fat tasting pleasantly of nuts and melting at about 23°C. Its composition closely resembles that of coconut oil and its use in the manufacture of margarine is greatly to be recommended. The refined oil is suitable both for margarine and for conffectionery, etc.

(3) *Babassu oil*. — Obtained from the nuts of *Attalea funifera* (cocobassu or cocobassoba) a palm which grows in large quantities in Brazil, Mexico and British Honduras. Physically and chemically this oil is very similar to coconut oil from which it can hardly be distinguished. The nuts contain 64.8 to 68.5 % of oil. The melting point is lower than that of coconut oil on account

of the higher proportion of un-saturated glycerides. It has been known for several years in the margarine industry and may be widely used in the future.

(4) *Colza oil*. — Obtained from the Crucifera *Brassica Napus*. The oil content of the seeds varies according to the place of origin; the European seed containing 39 to 45 % that of Guzerat 44 %, and that of Ferozepore 40 %. The crude oil is dark brown and contains rather a high proportion of free fatty acids. The cold pressed oil is pale yellow, is fairly fluid and has a characteristic, but not unpleasant, taste and odour. Latterly the cold pressed oil has been refined in order to remove the odour almost entirely and to give a sweeter taste which makes it a good edible oil. When thus highly refined it provides a raw material for use in the margarine industry. The hot pressed oils are used for burning and soap-making. On account of its great fluidity and stability at low temperatures colza oil can be used with advantage in the margarine industry as a solvent of the colouring matters used in the manufacture of margarine. The fatty acids of colza oil are, principally oleic acid, stearic acid, erucic acid and a little arachidic acid. In the past colza oil was identified by its content in sulphur as the seeds of almost all Cruciferae contain compounds of sulphur which pass into the oil under pressure, but the highly refined oils which are at present on the market do not contain any sulphur. The chief characteristics of colza oil are its low solubility in acetic acid and its great fluidity.

(5) *Galam butter* (Kalitè, Cé, etc.). — Galam butter or Bambuk butter is extracted by pressure from the seeds of *Butyrospermum Parkii* which grows abundantly in West and Central Africa, chiefly in Northern Nigeria. The complete fruit contains 34 to 44 % of fat, while the kernel contains 40 to 45 % according to BOLTON and 50 to 60 % according to CLAYTON. The product prepared by the natives varies between brown and greenish grey according to the care that is given to the preparation. During the last few years the native products have improved greatly. The refined European product is generally white. The consistency of this butter is harsh, slightly granular and the native product has a rather strong taste and smell while the refined butter produced by Europeans has hardly any taste or odour. A third of the fatty acids is composed of stearic acid. The fat contains 5 to 9 % of unsaponifiable matter and has an extraordinarily high refraction index. The crystals obtained from ethereal solutions closely resemble those of beef fat. Galam butter is often broken up into stearin and olein, the first being used as a substitute for coconut butter and the second is employed in the margarine industry.

(6) *Kurdee oil*. — The seeds of *Carthamus tinctorius*, a plant cultivated in India, Egypt, the Caucasus and also in Europe, containing 25 to 30 % of golden yellow oil, liquid at ordinary temperatures.

(7) *Coconut oil*. — Is obtained from the fruit of the coconut palm (*Cocos nucifera*). The refined edible oils are sold under the following designations: Nucoline, Cocolardo, Vegetaline, Palmine, Nutrex, Nutto, Cocaoline, Cocose, vegetable lard, nut lard. The principal centres of production are Ceylon, India, the Philippines, South America, the islands of Oceania and Cochin China. The best quality comes from Cochin China, medium quality from Ceylon and the lowest quality from India. The oil is known commercially as Cochin oil, Ceylon

oil, copra oil, the first being the best quality. Coconut oil is prepared either in the countries of origin, principally in Ceylon and Cochin China, or in the large ports, such as Hamburg, Marseilles, Bremen, etc. In the past only coconut oil obtained by compression was on the market, while today there are considerable quantities of oil extracted by solvents, though the expressed oil is of a higher quality. The dried kernels (copra) contain about 65 % of oil.

The cold pressed oil is slightly yellowish, with a penetrating odour and a sharp taste. In European climates the oil is of a creamy consistancy and liquid in the countries of origin. Coconut oil was used to be used for making soap, but since it has been possible to obtain from the raw oil a white product, odourless and tasteless, refined coconut oil has been put on the market as a delicate edible oil. Coconut oil is distinguished from other oils, except babassu and palm kernel oils, by its abnormally high content in myristic and lauric acids while the content in stearic and palmitic acids is exceptionally low and oleic acid is nearly absent. The following are approximately the quantities of fatty acids contained in coconut oil: lauric acid 45 %, myristic acid 20 %, capric acid 20 %, caprylic acid 9 %, palmitic acid 7 %, stearic acid 5 %, oleic acid 2 %, capronic acid 2 %. Refined coconut oil plays a leading part in the margarine industry and it may be said that about 50 % of the fats used in the margarines sold at present consist of coconut oil, above all now that the refined oil has such excellent qualities with regard to colour, odour and taste. The only disadvantage it may be said to have is that it melts too suddenly. At 23° C it is as hard as a stone while at 28° C it is completely liquid. An intermediate butyraceous condition does not exist with the result that margarine prepared with large quantities of coconut oil cannot have the appearance of butter.

(8) *Palm kernel oil.* — Palm oil and palm kernel oil are derived from the fruit of *Elaeis guineensis*, palm oil being extracted from the fruit and palm kernel oil from the seeds. The seeds or kernels contain 44 to 49 % of palm kernel oil according to CLAYTON and 45 to 55 % according to FRANZEN. This oil closely resembles coco-nut oil from which it is distinguished by a higher melting point: 31° C. It is white or slightly yellow in colour and, after refining, is largely employed in the margarine industry, though coconut oil is preferred. Either expressed oil is used or that which is extracted by solvents, but the former is decidedly superior for margarine. Palm kernel oil resembles coconut oil in its chemical composition. ELSDON gives the following table for the two oils:

Fatty acids	Palm kernel oil	Coconut oil
Caproic acid.	2 %	2 %
Caprylic acid	5	9
Capric acid	6	10
Lauric acid	55	45
Myristic acid	12	20
Palmitic acid	9	7
Stearic acid	7	5
Oleic acid	4	2

(9) *Palm oil*. — Palm oil is produced by the oil palms *Elaeis guineensis* and *E. melanococca* indigenous to East Africa and South America. The pulp of the fruit contains 55 to 65 % of very acid oil formerly prepared by the natives. Now that the pressing is carried out under the direction of experts palm oil is more suitable for making margarine. The fatty acids of palm oil are : palmitic acid, oleic acid, small quantities of stearic acid, linoleic acid and heptadecylic acid.

(10) *Kapok oil*. — Obtained from the seeds of *Eriodendron anfractuosum*, a tropical plant extensively cultivated in Java. The proportion of oil in the seeds from Ceylon is 22 % and from Calcutta 24 to 25 %. This oil is brownish in colour, is liquid at ordinary temperatures, but deposits "stearin". The odour and taste are not disagreeable, but recall those of cotton-seed oil.

(11) *Soya oil*. — This oil is obtained from the seed of *Soja* (*Glycine hispida*). The principal countries producing soya are: China (in Manchuria 80 % of the world total), Japan, Corea. and, latterly, North America and Brazil. The attempts at cultivating soya in Europe, chiefly Germany and Austria, have been completely abandoned. The entire bean generally contains 16 to 19% of oil. In the crude state this oil is dark brown, thick and has a disagreeable taste and smell.

The refined oil is less thick, pale yellow in colour and has hardly any taste or odour. Only the first quality refined oil is suitable for making margarine. The fatty acids consist, according to FELLERS, of 15 % palmitic acid, 56 % oleic acid, 19 % linoleic acid and 5 % linolenic acid. Soya oil belongs to the category of semi-drying oils. It is chiefly on account of its low price that soya oil has taken a prominent place in the manufacture of margarine during the last few years.

(12) *Niger oil*. — Obtained from the seed of *Guizotia abyssinica*, a plant which grows in East Africa, India and the West and East Indies. The seeds contain 40 to 45 % of a golden yellow oil which tastes pleasantly of almonds and has little odour. For alimentary purposes only the cold pressed oil is used.

(13) *Cottonseed oil*. — The seed of various species of *Gossypium* are used for the preparation of this oil. The principal are:— *Gossypium hirsutum* (America), *G. bardadense* (Egypt), *G. neglectum* and *G. arboreum*. The four principal types of cottonseed oil are: crude oil as it is extracted from the seed — refined oil for soapmaking which is unsuitable for alimentary purposes — common edible oil, completely neutralised by alkalis without deodorisation.— deodorised oil of the first quality. The proportion of oil is about 37 % in the oleaginous part and 20 % in the entire seed. The crude oil is a very dark brown, but it is generally partially or completely refined by partly or totally eliminating the free fatty acids by means of caustic soda which at the same time removes most of the colouring matter, leaving the oil pale yellow. The colour of the oil depends on the seed and its place of origin. Indian cottonseed is dark brown while Egyptian is light red. After the first treatment with alkalis and washing in water, decolorising earths are used, generally fullers earth. During conservation the oil deposits considerable quantities of stearin at ordinary temperatures and even more during the cold winter spells. Oil freed from stearin is called "winter oil". The best quality oil is known in the trade as "butter oil" and is the one

that is principally used in the manufacture of margarine. The oil containing stearin, called "summer oil", does not keep so well as "winter oil" and is therefore less suitable for use in the preparation of margarine.

Cottonseed oil stearin, also called "cottonseed stearin", is obtained by compression as already described for oleostearin. Its use is limited in the margarine industry being chiefly employed for making frying margarines.

(14) *Sunflower oil*. — This is obtained from *Helianthus annuus*, a plant originating in Mexico and cultivated extensively in Russia and to a less extent in China, Hungary, South Africa, India and Mexico. The entire fruit contains 20 to 25 % of oil and the seed (that is to say the oleaginous part) 40 to 52 %. Hungarian seed contains as much as 50 % of oil while Russian seed rarely contains more than 40 % (BOLTON). Sunflower oil, cold pressed and refined, is yellow in colour and has a pleasant smell. It resembles olive oil to a certain degree and remains liquid at low temperatures. The fatty acids are—linolenic acid, oleic acid, palmitic acid. Sunflower seed oil is an excellent edible oil and is not yet employed in the margarine industry to the extent that it merits.

(15) *Linseed oil*. — Obtained from the seed of *Linum usitatissimum*, cultivated in Central Asia, India, America, Russia, Argentina, etc. The variety known as "Baltic Sea" gives the purest oil chiefly because the seed is not mixed with that of other plants. "Black Sea" seed is almost always mixed with small quantities of sesame, hemp, colza, etc. The oil content varies greatly with the place of origin. According to FRANZEN the seed contains 30 to 35 % of oil, and to BOLTON, 36 to 40 %. Cold pressed linseed oil is pale yellow and has a particular taste and smell. Hot pressed oil is darker. The former only is used for alimentary purposes. The acid fats are: oleic acid 5 %, linoleic acid 15 %, linolenic acid 15 %, isolinolenic acid 65 %; stearic, palmitic and myristic acids together 10 to 15 %. There is not a specific reaction for linseed oil; it is characterised by a high iodine index: 178 to 200. Before the war considerable quantities of refined linseed oil were used in the manufacture of margarine, but, on account of its penetrating odour and its oxidability when exposed to the air, it is no longer used to the same extent.

(16) *Sesame oil*. — Also called Gingelly oil, is obtained from the seed of *Sesamum indicum*, grown in hot countries such as India, China, Asia Minor, Japan, etc. The seed contains 48 to 54 % of oil and sometimes even 58 %. The yield from compression varies between 42 and 48 %. The cold pressed oil is pale yellow, and deposits very little stearin during conservation. The taste is agreeable resembling that of hazel nuts and it is practically without smell. Hot pressed oils are darker and have a strong taste and therefore cannot be used for margarine. The fatty acids are: linoleic acid (about 16 %), oleic acid (about 72 %), stearic and palmitic acids. The presence of myristic acid is uncertain.

Sesame oil occupies a special place among the raw materials used in the manufacture of margarine as the majority of countries have prescribed the addition of 10 % sesame oil to margarine, the reason for this being that sesame oil can be easily identified and margarine made with this oil can be distinguished from butter after a very brief examination.

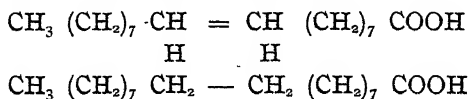
(17) *Tea seed oil*. — Obtained from the seed of *Thea Sasangua*. The greater part of this oil comes from China and can be refined for food purposes. The refined oil is golden yellow and has a very low content in free fatty acids (0.2 % of oleic acid). The expressed oil contains saponin which is dangerous from the physiological viewpoint. Oil extracted by solvents is considered free from saponin. Latterly tea seed oil has been used in the manufacture of margarine.

(18) *Maize oil*. — This is obtained from the germs of *Zea Mays*, a residuary product of the manufacture of maize starch which contains about 53 % of oil, the technical yield being 30 to 35 according to BOLTON and 40 % according to FRANZEN. The cold pressed oil is fairly thick, golden yellow and has a taste of maize which is difficult to eliminate. It contains the following fatty acid: stearic, palmitic, arachidic, hypogeic, oleic, linoleic, linolenic, capronic, caprylic and capric. Maize oil belongs to the category of semi-drying oils and, in that category, has a relatively high iodine index; about 75. It is characterised by its high content in unsaponifiable matter, varying between 1.5 and 2.5 %, and consisting principally of lecithin. On account of its low stability and drying properties maize oil takes only a secondary place in the manufacture of margarine though it is used as colouring matter in the American margarine industry.

C. — Solidified fats.

The demand for solidified fats is constantly increasing on account of their use in the manufacture of candles and soap and for food fats. For some time a means has been sought for obtaining solidified fats by separating the superabundant fluid oils, the fats being less costly than these oils. Thanks to the introduction of hydrogen into the molecules of liquid fatty acids and their glycerides by catalysis, an economic process has been found which permits the production of not only industrial fats, but also edible fats.

From the scientific point of view the process of solidification of oils by catalysis can be explained by the fact that the glycerides of unsaturated fatty acids with a large number of carbon atoms or the fatty acids themselves are transformed into corresponding saturated acids. Thus, for example, the glyceride of oleic acid contained in all oils is transformed into stearic acid by the introduction of 2 atoms of hydrogen into the double linkage as follows :



By this process hydrogen is added to each double linkage of carbon also transforming the un-saturated acids several times (as for example, linoleic acid, linolenic acid, gadoleinic acid, clupanodonic acid) and their glycerides into corresponding saturated compounds. With un-saturated acids having several carbon atoms, hydrogenation probably takes place by degrees. If there are unsaturated hydroxy acids (or their glycerides) in fats, such as ricinoleic acid in castor oil, the introduction of the hydrogen group takes place only where there is a double linkage and the hydroxylic group remains intact forming saturated hydroxy acid or the

reduction goes further and acts also on the hydroxylic group by substituting a hydrogen atom. In this case ricinoleic acid gives stearic acid. Both of these cases are dependent on the temperature employed.

For the manufacture of artificial edible fats hydrogenation is continued until a melting point of about 37° is arrived at. In the stearin candle industry hydrogenation should be carried as far as possible to obtain products with a high melting point. According, therefore, to the intensity and duration of catalytic hydrogenation so products are obtained from fluid oils being more or less soft or solid. As hydrogenation increases so the melting point also rises and the density of the solidified fats obtained, while the iodine index, solubility in ether and the refraction index decrease. The solidification of fats is accompanied by deodorization and bleaching which is of great importance for fish oils which, on account of their smell, cannot be used in the artificial fat industry without hydrogenation. Bleaching takes place as hydrogenation advances, passing from brown to deep yellow, pale yellow, yellowish grey and finally white. Soft or semi-soft solidified fats closely resemble lard (melted pork fat) while more solid fats bear a greater resemblance to beef or mutton fat. The taste of solidified oils is never very unpleasant. Products which have been subjected to a more complete hydrogenation sometimes taste like lard, but generally they are tasteless. Solidified oils have a great power of retaining water which is an advantage for the margarine industry, but in spite of that hydrogenated oils rarely become rancid even when exposed for long periods to damp air.

The usual method of hydrogenation of fats with finely divided nickel as catalyst is due to SABATIER and SENDERENS who showed that the un-saturated compounds such as hydrocarbons, are transformed into saturated compounds by the introduction of the hydrogen group into the double linkage by leading hydrogen at a high temperature over recently reduced metals such as copper, iron, nickel, cobalt and platinum mixed with the fats.

NORMANN was the first to show that it was sufficient to make hydrogen act, in the presence of nickel, on the fatty acids and liquid fats to fix the hydrogen by addition on the double linkage of these organic substances and thus to transform them into solids.

The methods employed at present in solidifying fats are based on the processes of NORMANN, BEDFORD, and WILBUSCHEWITSCH.

Understanding of the theory of hydrogenation is facilitated by the following hypotheses enunciated by F. BLOEMEN:—

(1) Hydrogenation in the presence of catalysts is a reversible process, having a positive thermic effect;

(2) In the course of this reaction the hydrogenation is produced of a certain number of compounds with several double linkages, present in the same radical of fatty acid or distributed over several radicals of a polyglyceride. Hydrogenation takes place gradually so that there is equilibrium between the various phases of the operation.

(3) The catalyst is liable to form, from the heterogeneous polyphase system hydrogen-oil-catalyst, a phase of homogeneous reaction to which it transmits the hydrogen pressure of the gaseous phase.

These hypotheses explain certain phenomena observed, such as:— the increase in selectivity by a rise in temperature during hydrogenation of compounds with several double linkages; the diminution of that selectivity following an increase in pressure; the fact that the speed of hydrogenation generally increases up to a certain temperature and then decreases again, etc.

The reduction and hydrogenation of higher aliphatic, carboxylic acids has been recently treated by SECK. The transformation of the higher carboxylic fatty acids group into oxymethylic groups can be performed by the following methods:—

- (1) Utilisation of gaseous hydrogen in the presence of catalysts :
 - (a) at high temperature and low pressure;
 - (b) at high temperature and high pressure;
- (2) Use of alcoholate of sodium.

Rise in the temperature of hydrogenation results in a great improvement in the yield of the reduction and permits the use of catalysts other than precious metals such as palladium and platinum. It has been possible to transform ethyl oleate into stearic alcohol, at 270 to 280° at atmospheric pressure, in the presence of a copper chromate catalyst.

At high pressure (about 500 atmospheres) the reduction is more profound: the carboxylic groups are completely hydrogenated into methylic groups, and the secondary alcoholic groups are transformed into methylenic groups, non-hydroxylated, while at atmospheric pressure, and even at 250 atmospheres, the secondary hydroxyls are not effected. Ordinary metallic salts may be employed as catalysts.

The alcoholate of sodium method is the only one which permits the preparation of un-saturated alcohols from the higher un-saturated fatty acids without touching the double linkage. The reaction is, however, a true hydrogenation, hydrogen resulting from the action of sodium on alcohol.

Researches on the transformation of aldehydes and ketones into alcohols by means of yeasts have shown that when un-saturated oils are added to the nutritive substance where these yeasts are multiplied, the oils gradually hydrogenate and solidify. This is the basis of the process patented by R. VON DER HEIDE which permits the obtaining of solidified oils almost without cost.

In order to accelerate the multiplication of micro-organisms, nitrogen compounds of low value are added to the broth of the culture, such as amino-acids, ammonium salts and various nitrogenous substances. Simultaneously with, or after the multiplication of the yeast cells, the fatty substances to be hydrogenated are added, as much as possible in the form of an emulsion.

After the separation of the fatty substances, which is done by the usual means, the residue may be used as a basis for the preparation of a remarkable nitrogenous food.

The total mixture is maintained at 35 to 42° and frequently agitated until fermentation is completed which lasts from 1 to 5 days according to the quantity of micro-organisms present. After separation the yield in fatty substances is from 95 to 100 %.

Solidifying under high pressure for the oil and margarine industries has been recommended by VAN DIJK, MEES and WATERMAN. The solidification of oils in the presence of a nickel catalyst can take place at temperatures between 30 and 60° provided that the hydrogenation takes place at high pressure. Oils thus solidified have very different qualities to those solidified at high temperature and under low pressure. Among other things, the colour of palm oil (principally the carotin) can be retained, also the blue colorimetric reaction of CARR and PRICE with trichloride of antimony in chloroformic solution still takes place after solidification of cod liver oil under high pressure.

At the present time, in the oil solidifying industry, the high temperature destroys the vitamins, the natural colours, etc. This is avoided by solidifying at low temperature.

The selective hydrogenation of fish oils has been successfully studied by UBBELOHDE and SVANÖE with regard to their deodorization, made difficult by the presence of clupanodonic acid. The most common method of deodorization is the hydrogenation of the oil which transforms that acid into more saturated acids. Other un-saturated fatty acids are also hydrogenated at the same time as the clupanodonic acid which changes profoundly the nature of the fish oils and limits their utilisation. With the processes used up to the present time, it is thus necessary to lower the iodine index of fish oil from 169.4 to 80 to arrive at complete deodorization. The same result can be obtained by delaying the hydrogenation by a judicious choice of the catalyst (for example, reduced borate of nickel) and without lowering the iodine index below 120. Under these conditions, the clupanodonic acid is the first to be hydrogenated. For 100 grammes of fish oil the iodine index of which is 162.4, the following are necessary: a temperature of 180°C, an agitator working at 1800 revolutions, and hydrogenation for a period of 1 hour. The result is an oil without odour or taste with an iodine index of about 120.

III. — ANALYSIS OF RAW MATERIALS USED IN THE MANUFACTURE OF MARGARINE

In the margarine industry only the best raw materials should be used if a completely satisfactory product is to be obtained. Generally speaking, these materials should be odourless, tasteless and colourless and should contain no acid. The taste and odour should be given by the milk and the desired colour by the addition of colouring matter. The raw materials are examined, not only from the organoleptic view point, but also from the physical and chemical. Among the methods of physical analysis, the determination of the melting point must be mentioned, also the solidification point and the molecular refractive power; among chemical methods those which fix the iodine index, the acid index, the saponification index, the REICHERT-MEISSL index - examination and separation of animal and vegetable fats - determination of the unsaponifiable matter and of the water - ascertainment of the soap.

Generally the melting point plays a fairly important part in determining the purity of the organic compounds, though in the analysis of the fats and oils it is more limited as the fats are not uniform substances, but mixtures. Therefore only the two stages of the process of fusion must be considered, the beginning and the end (limpid fusion), as the constituents of these mixtures have different melting points. During the solidification of melted fats, a considerable quantity of latent fusion heat is liberated. The temperature of fat in process of solidification remains constant for a certain time or even increases which is the reason why the solidification point can be determined with more precision than the melting point, and still more exactly for free fatty acids separated from the fats.

The ascertainment of the molecular refractive power is of little importance in judging the raw materials of margarine. It is chiefly useful for the analysis of the fats of butter and lard. For this purpose the ZEISS butyro-refractometer is generally used.

The iodine index is very important as the raw materials used in margarine manufacture should if possible be free from free fatty acids, above all in the case of the solid vegetable fats such as coconut oil, palm kernel oil and palm oil, also of solidified fats and oils. All these materials keep much less well if they have a high acid content. As they are generally refined the iodine index is a valuable indication for the process of refining. The saponification index shows how many milligrammes of caustic potash are necessary for the complete saponification of a gramme of oil. This index is very variable: between 170 and 290, and the fats can be grouped in three categories according to their saponification indices namely:—

(1) Saponification index = 170-180, generally about 175 (the group containing colza and castor oil and oil from grape pips);

(2) Saponification index = about 193. This category includes the majority of oils and fats.

(3) Saponification index = 205-290 (butter fat, some solidified fish oils and the group of coconut oils);

In judging of the raw materials of margarine the saponification index plays an important part, chiefly for the group of coconut oils (coconut oil, palm kernel oil, babassu oil), for which there are no specific reactions.

The REICHERT-MEISSL index shows the number of cubic centimetres of alkaline solution 0.1 N necessary for neutralising the volatile fatty acids *soluble in water* contained in 5 grammes of oil. The POLENSKE index gives the number of cubic centimetres of this solution necessary for neutralising the volatile fatty acids, *insoluble in water*, contained in 5 grammes of oil. Generally, the oils having a high saponification index have also a high REICHERT-MEISSL index. The importance of the POLENSKE index is even greater chiefly on account of the high values of the coconut oil group. The iodine index gives the percentage of iodine which the oil can absorb and is, therefore, a measure for the content in unsaturated fatty acids of an oil. Formerly the iodine index was less important than it is now with the use of solidified fats and oils, as this index determines the degree of solidification of raw materials and also the melting point. For this

purpose a modification of the VON HÜBL method is used and also the newer methods of K. ROSEN MUND and W. KUHNHEMM.

It is of economic interest to determine whether the raw material is an animal or vegetable fat or a mixture of the two, the vegetable fats generally being much less costly than the animal fats. Analysis is based on the fact that all animal fats contain small quantities of cholesterin (often 0.1 to 0.5 %) and all vegetable fats contain small quantities of phytosterin (often 0.1 to 0.2 %). These alcohols, and even more their acetylic compounds, are distinguished by the melting point. The best method is that of MARCUSSON and SCHILLING.

The unsaponifiable matter is the part of the fat insoluble in water, also after treatment with alkalis. In all oils and fats there is an unsaponifiable constituent, in animal fats cholesterin and in vegetable fats phytosterin. Impurities are not considered as unsaponifiable matter, but as adulterations. The determination of unsaponifiable matter may be of importance in the manufacture of margarine, as maize oil can be easily ascertained on account of its very high content in unsaponifiable matter. For qualitative examination the HOLDE method is used and for the quantitative that of SPRITZ and KÖNIG.

The soap element is very important in judging raw materials used in margarine manufacture as refined oils are now employed on a large scale. During refining the free fatty acids are eliminated by means of alkalis, giving soap formations. Unless much care is used the soap remains in the refined oil. It is absolutely essential that the raw materials should be completely free from soap as even small quantities of this diminish the conservation properties and the stability of the oil, and the margarine is of an inferior quality. The quantitative examination is carried out according to the HOLDE method.

The determination of the water is also very important. It may be also found in an oil which has not been refined according to technical methods and greatly diminishes the stability of the oils. Its presence has a deleterious effect chiefly if the raw materials are preserved for a long period. The MARCUSSON methods is used for the quantitative examination.

IV. — THE PLACE OF MILK

Among the raw materials of a fatty nature, milk is the principal constituent of margarine. It gives the margarine two important properties: taste and odour. The majority of raw materials used in the manufacture of margarine are absolutely tasteless and odourless. This is above all the case with refined oils at the present day. It is from milk, treated in a special way, that margarine receives the desired taste and odour which causes it to resemble butter. The quality of butter, and chiefly its taste and essentially butyraceous odour, depends on the acidifying or ripening of the cream. Accordingly the margarine industry only employs milk acidified in a certain way, usually skimmed milk or serum. Skimmed milk is used as the fat of whole milk has not an important influence on the improvement of the taste and odour and it is better to use the relatively costly cream for butter making. Serum is often used to avoid a com-

ponent of milk (casein) which considerably diminishes the stability of the margarine. An artificial milk is also often used constituted by a simple solution of sugar in which the bacteria develop which cause acidification or ripening. In this case, however, it is not possible to have the taste and odour of natural milk. Lately, the use of dried milk has greatly increased in the margarine industry as since the introduction of modern processes of desiccation, dried milk bears a much closer resemblance to natural milk in respect to odour, taste and solubility. For the margarine industry chemical analysis of milk relates to: contamination, fats, dry matter, acidity and antiseptic substances. Bacteriological examination concerns: presence or absence of injurious bacteria, the age and resulting treatment of the milk.

V. — VARIOUS SUBSTANCES ADDED TO MARGARINE

Margarine does not only contain fats, oils and milk, but also a series of other substances having specific rôles which are added in quantities more or less small.

(1) *Colouring matters.* — The majority of raw materials in margarine, above all refined vegetable oils and solidified oils, are almost colourless or slightly yellowish, and a margarine made from these products is almost without colour. To give a colour resembling butter, colouring matter must be added which necessarily should be soluble in fat as a uniform colour can only be obtained by dissolving the colouring matter in a fatty mixture. Generally, the colouring matter is not added directly to the mixture, but a solution is prepared of colouring matter in oil at a certain concentration. In the past, chiefly alcoholic extracts of annatto and turmeric were employed which had the disadvantage of not giving a uniform colour. At present "Sudan" colouring matter is chiefly used. As a solvent a very liquid oil is employed to facilitate the addition, generally colza oil, which should be highly refined, all sulphuric acid used in the process of refining being removed as even small quantities of this acid modifies the colouring matter. The finely powdered colouring matter is dissolved by agitating it in oil heated to 70-75° C, and then carefully filtered. As it is very difficult to obtain a completely limpid solution, it must be left to stand for several days and then decanted so as to add a completely limpid solution to the mixture.

SCHAUB uses as colouring matter:— benzenazo-3-naphthylamine or ortho-toluenazo-3-naphthylamine or vegetable colourings such as annatto seed. The colouring matter, dissolved in acetone, trichlorethylene or another volatile solvent, is mixed and carefully stirred with starch. The solvent is subsequently eliminated by distillation leaving a coloured starch powder which, mixed with oleomargarine, margarine or some other fatty substance, more or less aqueous, has the property of imparting the colour to these substances. SCHAUB attributes this property to the presence of water which, in swelling the starch grains, causes the colour to pass into the fatty substances.

The colours generally used are yellow and reddish. As a rule the yellow colouring matter is used, though for oils and fats of a greenish colour this colour is compensated by employing the reddish colouring. The composition of colouring matter used in the margarine industry is, according to FRANZEN, approximately as follows:—

<i>Yellow</i>	<i>Red</i>
12.5 gm "Sudan" 2	18 gm "Sudan" 1
7.5 gm "Sudan" 1	2 gm "Sudan" 2
1000 gm refined colza oil	1000 gm refined colza oil

(2) *Salt and other preservatives.* — Both butter and margarine undergo considerable changes during preservation chiefly caused by the growth of micro-organisms in the milk or introduced from outside (moulds, etc). In margarine the conditions for growth of the micro-organisms are more favourable on account of the higher content in water. With regard to salt, the margarine industry needs other antiseptics, and as preservation with boric acid is prohibited, only benzoic acid and its salts can be used.

Kitchen salt used in the margarine industry should be as pure and as finely granulated as possible and should not have too high a content in magnesium compounds as they impart a bitter taste and render the salt too hygroscopic. The salt is only added to the margarine during mixing, without solvents; the grains, therefore should be extremely fine. The proportion of salt varies greatly with the place of consumption: generally 2 to 4 %, though sometimes margarine is completely unsalted.

It has been shown that salt can be a source of microbial contamination for dairy products though W. CLAYTON says that the addition of 12% sodium chloride destroys the greater part of the bacteria in butter or margarine. Yeasts and moulds are only very slightly sensitive to sodium chloride while lactic bacteria cannot resist more than 5 % salt. The Koch bacillus is not affected by salt.

The British patent 332 806 of the "Aktiengesellschaft für Medizinische Produkte" relates to a process for preserving natural and artificial butter by adding an inorganic ferment to digest the albumin, preferably in acid solution.

The substance here in question is pepsin which digests the albumins, but not the fatty substances: 30 gm of pepsin is pounded with 35 gm of glycerine, the whole being dissolved in a solution of 70 gm of hydrochloric acid at 25 % in 430 gm of water. The whole is afterwards thoroughly mixed with 35 kg of margarine. This margarine, which now contains 0.1 % of pepsin, is added to its weight in non-pepsined margarine. The final result is a margarine with 0.05 % pepsin.

(3) *Benzoic acid and its salts* (chiefly benzoate of sodium) are used as antiseptics. Benzoic acid has a higher antiseptic power than benzoate of sodium though its use is prevented to a certain extent by its solubility in water being very slight, it, therefore, must be reduced to very fine powder and added to the finished or half finished margarine

By adding these relatively small quantities of benzoic acid there is a risk of it not penetrating into all parts of the product, but, the other hand, the mixing operation cannot be prolonged too long as the consistency of the margarine suffers.

The use of benzoate of sodium is more general, in spite of its inferior antiseptic power, as this substance is easily soluble in milk and in water and can therefore be added almost at the beginning of the process of manufacture, either to the milk or the water, thus giving a completely homogeneous distribution. Benzoic acid is added at the rate of 2 per 1000 and benzoate of sodium at 4 per 1000.

(4) According to FRANZEN, *boric acid* would be the best antiseptic for margarine and he believes that minute quantities, such as are necessary in margarine manufacture, are quite harmless.

(5) O. PALLADINA has studied the use of *salicylic acid* as a preservative agent for margarine. The margarine tested contained 60 % coconut oil and salicylic acid was added at the rate of 0.3 % (permitted in Australia).

The results obtained confirmed the sterilizing action of salicylic acid on the micro-flora. Thus the moulds present in the freshly prepared margarine disappeared in the sample preserved by the addition of salicylic acid while they were almost quadrupled in the sample preserved without this acid. In the absence of moulds the total fat acidity does not increase, though, on the other hand, there is a serious disadvantage in the disappearing of lactic bacteria due to the addition of salicylic acid which occasions a loss of aroma and the appearance of a disagreeable flavour.

(6) In 1914 it was already proposed to incorporate a *alkalin lactate* with margarine in order to increase its conservation properties and to develop and preserve its aroma. Although this proposition has been known for some time it has not been possible, up to now, to find a practical application, as the price of alkalin lactate is too high for it to be used in the industry and the industrial lactates on the market are not recognised as being utilisable.

Following the experiments carried out by the Boehringer Sohn Company, it was found that among the various impurities in industrial lactates such as: calcium sulphate, alkaline sulphates, magnesium lactate, chlorides, products of the decomposition of albumins, furfurole and similar matters, colouring matter, etc., those which are most injurious to the preservation of margarine are precisely those which might be considered the least offensive, namely: volatile acid salts and particularly butyric and propionic acids. It was found that sodium lactate containing more than 0.5 % volatile acids in combination are not suitable for the manufacture of margarine. The alkalin lactates containing less than 0.25 %, are recognised as utilisable, above all when the proportion of butyric or propionic acid is as low as possible.

For example, an appropriate alkalin lactate can be obtained simply by crystallizing calcium lactate and magnesium lactate and using the first crystallization for the preparation of alkalin lactate in taking, for example, the crystals obtained and treating them with a hydrate or an alkalin carbonate, then separating the alkalin lactate from the hydrate, calcium carbonate or magnesium which is deposited; or in taking calcium lactate of the first crystallization, liberating the lactic acid from this salt, concentrating it highly and then transforming it into lactate.

Other researches have shown that for preserving margarine, "tampon-mixtures" of lactic acid can be used and lactates (that is to say, mixtures of lactic

acids and lactates at low concentration in hydrogen ions) such as those obtained by dissolving suitable quantities of alkanol lactate in lactic acid. The use of lactic acid solutions of this description, capable of being brought to the desired degree of dissociation, present this advantage, that the tampon solutions of lactic acid can be used at a high state of total concentration, but with a relatively low concentration in hydrogen ions which renders impossible the total disappearance of the effects of the preservative (due, for example, to a diminution in concentration) and at the same time eliminates all the exciting effects. These tampon-mixtures, the content of which in volatile acids or their salts is lower than the limits, indicated are superior to lactates for preservation and for improving the flavour.

(7) *Yolk of egg and its substitutes.* — The addition of yolk of egg and its substitutes is carried out with two purposes, one concerning the manufacture itself and the other concerning the properties of the final product. From the point of view of the manufacture the addition of yolk of egg causes a very intimate emulsion of the fatty substances and the milk, the components of which are not easily separated. As to the properties of the final product, it is necessary that margarine should have properties similar to butter, chiefly with regard to browning and the formation of froth. If skimmed milk or even serum is used instead of the whole milk, the margarine, when heated, will separate into a superficial fatty layer and a inferior aqueous layer which splutters. This is not the case with butter. For a long time only fresh yolk of egg was used, but for several years now yolk of egg preserved in kitchen salt and coming chiefly from China, is used for making margarine. Latterly dried yolk of egg has also been used which is much more uniform in quality than the preserved Chinese eggs, though its use on a large scale is prohibitive on account of its high price. Products known as vegetable albumin and mostly composed of lecithin are now also used and it appears that these products have an even higher emulsifying power and have been introduced largely into the margarine industry. Saccharose, generally in the form of a syrup, is also used for the same purpose as yolk of egg and lecithin.

I SANDOMIRSKI and B. SEMENOVA have studied the possibility of replacing yolk of egg by molasses as an emulsifier in margarine. When molasses is used at 1 to 1.5 % the margarine is greatly improved; it no longer forms "burnt" clots when cooking, nor splutters, etc. The taste of margarine made with molasses, which contains less salt, is also superior to that made with yolk of egg. Even better results are obtained by incorporating with the margarine 0.75 % of molasses and 0.07 to 1 % of yolk of egg.

As an emulsifier yolk of egg is also inferior to molasses. In margarine made with molasses the stability of the emulsion is twice as high as in margarine in which yolk of egg is used.

(8) *Vitamins.* — Since 1930 the food value of margarine has been increased by the addition of phosphatides (generally lecithin) which are added in the course of churning, either in the form of solutions in hot oils or as aqueous emulsions. The former are difficult to dissolve and the latter have little stability. A patent of RIEDEL DE HAËN claims to eliminate these disadvantages by presenting the phosphatides in the form of a solution in oxydized and polymerized oils which have

a considerable solvent effect on these phosphatides and permits their introduction into margarine in small volume. The operation is performed thus :

“ For example, 20 parts of lecithin or a mixture of different phosphatides, chiefly of vegetable origin, are dissolved in 80 parts of one of these “ emulsive oils ” obtained by oxidation and polymerization of unsaturated oils or in a mixture of 2 parts coconut oil and 28 parts “ emulsive oils ” or, if preferred, 40 parts of ground nut oil and 40 parts of “ emulsive oils ”. It is advantageous to make the solution by dissolving the two constituents separately in a common solvent (ether, for example), mixing them and then evaporating the ether at a moderate temperature. The deposit found in the solution when incompletely purified phosphatides are used is easily separated by filtration or centrifugation.

“ Another advantage of this process is that products can be used as solvents which themselves are useful for the emulsification of the margarine at the same time visibly improving the properties of these oils by the incorporation of phosphatides ”.

Another patent of RIEDER DE HAËN A. G. concerns a process for preparing these phosphatides and the substitution of yolk of egg by lecithins of vegetable origin. The author remarks that the extraction of pulp of soya or soya cake by benzine-alcohol mixtures only results in obtaining bitter and useless preparations. The impurities can easily be removed, according to the patent, by washing the residue in diluted alcohol containing at least 35 % water. The oil is afterwards removed by acetone and a product is obtained which is a perfect substitute for yolk of egg.

W. TRIGGS emulsifies an extract containing vitamins (from rice, green malt, cereals) with vegetable gums (gum arabic) or a vegetable mucilage (agar-agar) with or without the addition of yolk of egg ; this emulsion is added to the mass during churning.

According to the WANKLYN process, germs of wheat are dried in a deoxidizing atmosphere, then pulverised to make a paste or jelly which is well mixed with the margarine at the rate of 10 to 15 %.

The German patent 493 008 concerns a “ process for enriching vegetable margarines with vitamins, in which, instead of a gummy emulsion of a vitamin extract, a colloidal solution of vitamins is used obtained by the suspension in water of vitamin substances pulverised in a mill for colloids.” This permits the direct use of these vitamin substances without having to extract the vitamins.

The German patent 501 834 of AAGE W. OWE concerns a “ Process for extracting vitamins from fatty substances by saponification and extracting the unsaponifiable matters after saponification, characterised by the fact that the soaps, obtained with caustic alkalis, are treated by the fatty acids thus liberated, are separated and the vitamins are extracted from the solution which retains the unsaponifiable fractions ”.

(9) *Aromas*. — It has been proposed latterly to aromatize margarine by adding butter or cream. This is debarred in several countries by legislation on margarines which authorises a maximum content in butter of 3 % for aromatization. The problem is not completely solved by the use of a judicious

proportion of fermented milk as the aroma is not conserved long enough in the unfavourable conditions of manipulation in the margarine industry. Attempts have been made to fix this aroma.

Thus the German patents 300 221 and 300 922 recommend the addition of alkanal lactates and alkaline-earth; the patent 322 919 recommends also the addition of calcium salts of the first acids of the fat series; other patents advocate the calcium salts of acetic, formic or propionic acids or the corresponding acids, particularly propionic acid. The addition of mustard oil to milk to be fermented is also advised, with or without choline, betaine or lecithin, or even of citric acid. It is also recommended to add the sap of field grasses in order to communicate to the margarine a stable aroma resembling that of mountain butter, etc. Some of these patents have a certain value, but none of them completely attain their object.

JÜLICHER states that the use of large quantities of milk, which is a costly process, should be reserved for the first quality margarines. For the cheap quality margarines attempts have been made to incorporate with the margarines chemical [products giving an odour of butter. Thus the following have been successively recommended:— glycerides of volatile acids — butyric, isobutyric and caproic aldehydes — mixtures containing one or more of the following perfumes:— coumarin, vanillin, essences of rose, jasmine, acacia, etc. Nothing has given complete satisfaction except diacetyl, the use of which is the object of the French patent 664 030, which is approximately on these lines:—

(1) A process for producing or intensifying the aroma of butter in edible fats or mixtures containing edible fats. This process has the following characteristics:

(a) To these products are added, either during or after manufacture, diacetyl and similar combinations, or substances which can be transformed into these combinations; or these combinations are formed during one of the phases of manufacture of the said products;

(b) Diacetyl, combinations analagous to diacetyl or substances which can be transformed into these combinations are introduced into the fats by mixing them with the liquid containing these combinations, this liquid being subsequently separated again from the fats;

(2) The new industrial product obtained by this process.

It appeared, on application, that the diacetyl had, like the other aromas communicated by milk, the disadvantage shown by JÜLICHER of evaporating very quickly. The problem of fixing this perfume could be solved by the science of perfumery, as in the perfumery trade there exists a series of fixers unknown to the margarine manufacturers; but it would seem that as natural butter keeps its perfume, the fixer must be sought either among the extracts of animal origin or, in the fragrant field plants, in which case it may well, be that the product sought for does not yet exist in the essential oil trade. Sheep's butter has an odour of the grease of the wool and goats' butter smells of the grease of goat hair and it is not impossible that the fixing perfume of cows' butter will be found in the hair of the cow.

In spite of the always possible discovery of the ideal fixer, JÜLICHER thinks, with reason, that fermented milk cannot be replaced and that the diacetylene may supplement it with advantage, at least for the expensive qualities.

VI. — EMULSIONS

The emulsion plays a principal part in the manufacture of margarine as the two principal components, the fats and the milk or water, must be very thoroughly mixed so that they are not separable by mechanical means. An emulsion implies a very homogeneous mixture of two substances, more often liquid, insoluble in each other, of which one is in a state of very fine sub-division and surrounded by the other. It results that theoretically very different types of emulsion can be obtained. In margarine, for example, there is an emulsion containing oil finely sub-divided in water and another containing water finely sub-divided in oil. There are different theories on the nature of emulsions and their origin. At present the opinion held is that to obtain a stable emulsion between two liquid substances the presence of a third substance is necessary, that is, an emulsifying agent. From pure water and pure oil it is not possible to obtain a stable emulsion having a high concentration in oil. If a little soap, for example, is added the formation of the emulsion takes place at once. As to the rôle of the emulsifying agent, it is thought that the solid parts of this agent are absorbed at the surface of the disperse phase and that they form a film around the particles which protect them from direct contact with each other. All emulsifying agents are of a colloidal nature: gelatine, casein, albumin and starch are true colloids, but also solid emulsifying agents such as clay, silicic acid, etc, act when in a state of very fine sub-division, that is, when they approach the colloidal state. The type of emulsion which results from an emulsifying agent strictly depends on the nature of that agent; with a single emulsifying agent two types of emulsion can be obtained. It must also be remarked that one type can be transformed into the other (CLOWES).

In margarine the conditions are very complicated as on the one hand there is a solid emulsion, and on the other it is not simply a question of oil and water, but oil and an emulsion already existing, namely milk.

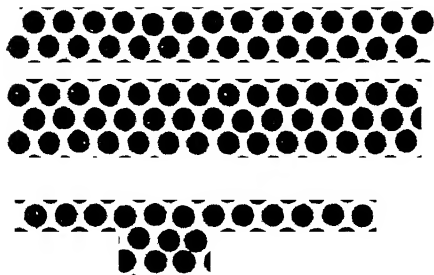
Doubtless, during churning, an emulsion of the "oil in water" type is obtained, but the finished margarine is, like butter, an emulsion of the "water in oil" type.

This fact is important in its effect on the taste and the keeping property of the margarine; the aroma-giving principle is constituted here exclusively by the milk, that is, by the liquid phase. On the other hand, margarine of the "water in oil" type is much more resistant to bacterial infection than the inverse type, as oil is a very bad nutritive medium for bacteria, while the skimmed milk (water) is an excellent one. In the case of the "oil in water" emulsion the bacteria find in the continuous "water" phase a nutritive medium throughout the whole mass and can spread with ease. In the contrary case of a "water

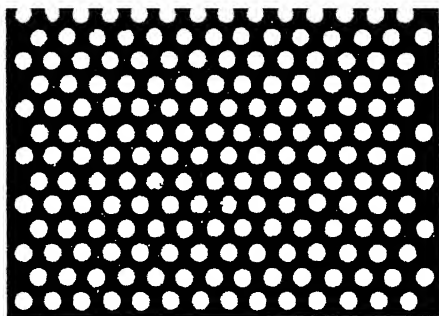
in oil" emulsion, they can only spread in isolated drops of water and can only traverse the "oil" phase very slowly.

To determine the types of emulsion there are 3 methods, namely, the drop method, the colorimetric method, and the method of resistance to electric currents.

The problem of the stability of emulsions of margarine has been studied by LESSOKHINE chiefly for certain margarines constituted by emulsions of the "water in oil" and "oil in water" type. His tests were made on the action of various emulsifying agents such as gelatine, starch, sugar, carbonate of soda, skimmed and unskimmed milk, whey etc., and on the influence of temperature



Water in oil emulsion



Oil in water emulsion.

and various factors on the emulsification, etc. It results from this study that the margarine emulsions are not stable; heated to fusion temperature they decompose or produce an inversion of the type of emulsion. Between 20 and 50°, the temperature has hardly any effect on the emulsification.

Sodium chloride at weak concentration (5 % solution), in increasing the superficial tension in the case of water alone, diminishes it to the limit water-oil and favours emulsification.

For emulsions of the "oil in water" type, the best emulsifiers are gelatine, starch, sugar and carbonate of soda; the action of the last of these is explained by the formation, with the fatty acids present, of a soap having excellent emulsifying properties. Emulsification is, on the other hand, greatly assisted by the proteins.

The researches made by KOVALENKO and MIKHLOVSKI on the stability of the milk-emulsion which is of great importance for the quality of the margarine, as on this stability depends the property of the margarine to melt like natural butter, without froth or spluttering. On the other hand, the stability of the emulsion increases the duration of conservation of margarine.

The stability of the emulsion depends on the relation of the densities of the fats and the liquid contained in the margarine: it is all the greater when the densities approach each other. Yolk of egg facilitates emulsion.

With regard to the character of the emulsion, microscopic examination as well as methods of electric conductivity, of staining and of dissolution of the drops, show that it is an emulsion of water in the fat. It is useless to emulsify for too long a period ; 20 to 30 minutes is sufficient ; a longer period injures the stability of the emulsion.

VII. — MANUFACTURE OF MARGARINE

The following are the various phases of manufacture :

- (1) Preparation of the fatty mixture.
- (2) Preparation of the milk :
- (3) Churning the fatty mixture with the milk.
- (4) Cooling the margarine emulsion.
- (5) Kneading of the crude margarine.
- (6) Moulding and packing.

(1) Preparation of the fatty mixture.

In this preparation the suitability of the various fatty substances and oils must be taken into account.

Addition of oil to margarine (sesame, ground nut, sunflower, rape, soya oils), varying from 20 to 40 % of the fatty substance according to the time of year, is made with the object of lowering the melting point of the mixture and giving pliability to hard and dry substances. The two dominant reasons for the addition of oil are taste and stability ; it is therefore, comprehensible that, for instance soya oil, being only semi-drying, cannot be used in the best qualities of margarine, even after being highly refined; in fact it produces an after-taste of varnish which cannot be concealed even by the addition of milk..

The researches undertaken by K. BANDAUI with a view to giving a more stable form to soya oil by hydrogenation in order to transform the linolic and linolenic acids into oleic acid, have failed as it proved impossible to check solidification at the desired point before transformation into stearin.

Contrary to the oils, the fats, that is, the solids added to margarine, should be considered from a third aspect, namely, their great influence on the consistency of the finished product. The possibility of varying the combinations in the formulae of manufacture depends on the particular properties of these fats and their opposition to those of the fluid oils ; their properties are in fact communicated to the finished margarine by the variations in consistency, pliability, colour, etc.

At the time when the solidified oils (ground nut and sunflower), with a melting point of 32 to 34° were first employed in the margarine industry, it was believed that the costly animal fats could be abandoned even for the best qualities. It must be recognised that these solidified oils are particularly suitable for the

preparation of margarine. They, have, above all, the property of more satisfactorily preserving the aroma of the broths of lactic culture for a long period and of giving them an excellent medium for development, and are preferable to animal fats which lose the aroma much more quickly. They are also much more stable than coco butters, which, however excellent they may be, only keep for a short time in margarine mixtures so that in summer they can hardly be used with milk, and naturally they lack the aroma of butter.

But, however suitable these solidified oils may be for replacing completely the animal fats, they lack important qualities, which are the specific qualities of "neutral lard", "premier jus" ("oleo stock") and "oleomargarine".

Even at only 10 %, "neutral-lard" gives the product a colour, a homogeneity, a suppleness which can be given by no other fat.

"Premier jus" and "oleomargarine" give the margarine that resistant and fibrous texture which disappears slowly when melting in contact with the tongue and resembles butter without giving a hard and granular impression as do hydrogenated fatty substances, rich in stearin. It is the particles of stearin, in fact, which give these hydrogenated substances a more granular and brittle structure. It is certainly possible, by diminishing the hydrogenation, to obtain a softer and more fatty product, but it is not possible to arrive at the homogeneity of animal fats.

The composition of the fats varies greatly according to the season, the type and quality of margarine to be prepared, also the state of the market of the various oils and fats. In hot weather there is an increase in the quantity of solid fats at the expense of the liquid oils, the position being reversed in winter. The choice of oils and fats from a qualitative and quantitative view point has been the object of numerous researches, the economic yield and the quality of the margarine being dependent on this choice.

Tables I-VI give some formulae for the composition of fatty mixtures in the manufacture of margarine.

The liquid oils arrive at the factory generally in iron drums; the solid fats in barrels or iron drums with removable covers. The oils are pumped into storage tanks and the solid fats are removed from the barrels with spatulas and placed in melting pans. These are generally rectangular, round, or oval and made of plated iron with water jackets and supplied with agitating apparatus. They are often assembled in batteries. The fats are melted by the direct introduction of steam into the water jacket, taking care that the temperature of the melted fat does not rise too high as the quality of the fat is adversely affected especially if too high a temperature is maintained for more than a certain time. The fats should have a temperature of not more than a few degrees above their melting point. In up-to-date factories there is a special pan for each fat which also acts as a storage tank. From these the oils and liquified fats are drawn off and weighed after which they are placed in a temperboiler with a water jacket and agitating apparatus and furnished with a thermometer. The water jacket has a cold water outlet pipe as well as an inlet pipe for steam. The oils and fats are first mixed in the temperboiler

TABLE I. — *Composition of various pre-war margarines*
(according to CLAYTON).

A	B	C
<div> <div>%</div> <div>« Neutral-lard » . . . 29</div> <div>Oleomargarine . . . 60</div> <div>Groundnut oil . . . 11</div> <div>100</div> </div>	<div> <div>%</div> <div>« Neutral-lard » . . . 20</div> <div>Oleomargarine . . . 55</div> <div>Coconut oil . . . 11</div> <div>Groundnut oil . . . 14</div> <div>100</div> </div>	<div> <div>%</div> <div>« Neutral-lard » . . . 16</div> <div>Oleomargarine . . . 50</div> <div>Coconut oil . . . 13</div> <div>« Premier jus » . . . 6</div> <div>Groundnut oil . . . 15</div> <div>100</div> </div>
Melting point = 27°,6 C	Melting point = 26° C	Melting point = 26° C

TABLE II. — *Composition of various margarines during the war*
(according to CLAYTON).

A	B	C
<div> <div>%</div> <div>« Neutral-lard » . . . 15</div> <div>« Premier jus » . . . 10</div> <div>Oleomargarine . . . 30</div> <div>Coconut oil . . . 20</div> <div>Cottonseed oil . . . 25</div> <div>100</div> </div>	<div> <div>%</div> <div>« Premier jus » . . . 15</div> <div>Coconut oil . . . 15</div> <div>Palm kernel oil . . . 50</div> <div>Groundnut oil . . . 20</div> <div>Cottonseed oil . . . 10</div> <div>100</div> </div>	<div> <div>%</div> <div>Oleo-stearin . . . 15</div> <div>Coconut oil . . . 45</div> <div>Palm kernel oil . . . 20</div> <div>Groundnut oil . . . 20</div> <div>100</div> </div>
	Melting point = 25° C (about)	Melting point = 24°,5 C

TABLE III. — *Composition of margarines for cake*
(according to CLAYTON).

A	B	C
<div> <div>%</div> <div>Oleo-stearin . . . 23</div> <div>« Premier jus » . . . 30</div> <div>Cottonseed oil . . . 47</div> <div>100</div> </div>	<div> <div>%</div> <div>Coconut oil . . . 70</div> <div>Palm kernel oil . . . 10</div> <div>Cottonseed oil . . . 20</div> <div>100</div> </div>	<div> <div>%</div> <div>« Premier jus » . . . 37</div> <div>Oleomargarine . . . 21</div> <div>Cottonseed oil . . . 42</div> <div>100</div> </div>
Melting point = 24° C	Melting point = 21°,5 C	Melting point = 24° C

TABLE IV. — *Composition of margarines for pastry*
(according to CLAYTON).

A		B		C	
	%		%		%
Oleostearine	65	Oleostearine	50	Oleostearine	35
« Premier jus » . . .	15	« Premier jus » . . .	30	« Premier jus » . . .	20
Liquid oil	20	Liquid oil	20	Palm kernel oil . . .	35
	100		100	Liquid oil	10
					100
Melting point = 40° C		Melting point = 39° C		Melting point = 37° C	

TABLE V. — *Margarines composed principally of animal fats*
(according to FRANZEN).

1st. quality		2nd. quality		3rd. quality	
	%		%		%
Oleomargarine	40	Oleomargarine	20	Oleomargarine	20
« Premier jus » . . .	20	« Premier jus » . . .	30	« Premier jus » . . .	40
« Neutral-lard » . . .	15	« Neutral-lard » . . .	8	Solidified fats . . .	10
Sesame oil	10	Solidified fats	7	Sesame oil	10
Groundnut oil	10	Coconut oil	10	Soya oil	20
Cottonseed oil	5	Sesame oil	10		100
	100	Soya oil	15		
			100		

TABLE VI. — *Margarines composed principally of vegetable fats*
(according to FRANZEN).

1st. quality		2nd. quality		3rd. quality	
	%		%		%
Coconut oil	70	Coconut oil	45	Palm kernel oil . . .	50
« Neutral-lard » . . .	10	Palm kernel oil	20	Solidified fats . . .	20
Sesame oil	10	Solidified fats	10	Sesame oil	10
Groundnut oil	5	Sesame oil	10	Soya oil	20
Cottonseed oil	5	Cottonseed oil	5		100
	100	Soya oil	10		
			100		

and brought to a certain temperature which must be strictly maintained and varies between 28 and 32° according to the composition of the fatty mixture. The maintainance of an exact temperature for the different sorts of margarine is of primary importance for the successful results of churning. The necessary colouring matter is also added in the melting pans and temperboilers.

(2) Preparation of the milk.

Milk is the principal element for giving margarine its odour and flavour. Whole milk is used and also skimmed, dried, and artificial milk and serum. In the past whole milk was used in large quantities, especially for the finest qualities, but today skimmed milk is used almost exclusively, though, as it is an excellent nutritive element for undesirable micro-organisms on account of the casein which it contains, it is gradually being replaced by serum.

Pasteurization should be carried out preferably at 60 to 63° for 20 to 30 minutes, the subsequent cooling being very rapid.

Margarine made with non-acidified milk resembles butter only very slightly in taste and odour. To obtain this characteristic odour and taste of butter the milk used in margarine making must be treated as cream is treated for butter making. The milk is acidified to cause lactic fermentation after pasteurization so that any other fermentation is prevented as far as possible. Pure cultures for acidifying milk are found on the market in both liquid and solid forms. At present the solid form, which is more easily preserved, is generally employed. In the liquid form, in a nutritive medium, the bacteria continue to grow so that, during conservation, there is a risk of undesirable secondary bacteria developing. Liquid cultures should, therefore, be carefully examined before use. These disadvantages are avoided by the use of dried solid cultures in which the bacteria cannot develop for lack of a nutritive medium. Dried pure cultures are prepared by mixing the liquid culture with different substances such as starch, lactose, dried milk, lime, plaster, etc., the paste being dried in a vacuum at as low a temperature as possible. Care must be taken that the temperature does not rise too high as even in a vacuum the bacteria of lactic acid are easily destroyed. The pure cultures should be constantly examined for purity, vitality, fermentation, property of giving analogous results by ulterior inoculation, and flavour producing properties.

The pure culture should not be added in powder form to the milk as the result would be an acidification that was not at all uniform; also the milk would be contaminated by the paste added to the pure culture (lime, plaster, starch, etc.). A mother culture must be employed for acidifying the milk, prepared in the laboratory of the factory. Formerly milk was acidified at about 30°C, but it has been found that better results are obtained at 15°. The milk is mixed with this mother culture and left to stand.

The degree of acidification depends on the experience of the manufacturer and the kind of margarine to be obtained. The flavour and odour are usually controlled during the progress of acidification. In order to obtain uniform re-

sults it is advisable to titrate the acidification gradually, with caustic soda 0.25 N and to continue this until the most satisfactory titre is reached. After acidification the milk should be used at once or cooled quickly to prevent further acidifying. Before adding the acidified milk to the mixture the necessary quantity of yolk of egg, or a substitute, is beaten up with the milk; other substances are also added at this time.

Before acidification, products for improving the taste and odour such as mustard seed oil and mixtures containing mustard seed oil, may be added to the milk.

The BOCHINGER patent is based on the certainty of obtaining better results if a defined quantity of soda lactate is added to the milk immediately before or during acidification with a view to developing the flavour and odour. By this means a more perfect union of the aromatising substances and the lactate is arrived at and also a more complete acidification and aroma of milk. The parasitic fermentations in the mass are also entirely arrested.

This process permits a notable economy in milk. If milk of good quality is used, the quantity can be reduced in such proportions that the milk no longer adds to the margarine the percentage of water permitted by law. Kneading intended for removing the water thus becomes entirely unnecessary.

A certain quantity of lactate may be added to acidified cream and added to the margarine if it is desired to obtain a flavour and odour approaching even more closely to those of butter, the quantity of lactate being such that the finished product will not contain more than 0.5 to 1.2 %.

(3) Churning of the fatty mixture with milk.

In margarine manufacture it is essential to mix the fats and milk thoroughly so as to make it impossible for the components of the emulsion to separate, either spontaneously or by mechanical means. The fats and milk are practically insoluble in each other, therefore a mixture by solution of these two components is impossible. Consequently, these are emulsified, that is to say, one of the two (fat) is very finely sub-divided in the other (milk) so that the one in a state of fine sub-division is suspended in the other on account of the superficial tension. This sub-division can be carried so far that the diameters of the fat particles are not more than 0.01 to 0.0016 mm. This is arrived at by vigorously agitating the mixture for some time or by submitting it to high pressure through a very small space. Although the latter process is the simplest, requires less labour and allows of continuous working, the first is used in the margarine industry. The apparatus employed is an oval iron plated churn with a water jacket which can be steam heated and water cooled. In the interior are two agitating devices 90° from each other arranged so that the two axes are very close together. These are plated and often pierced and work in opposite directions. At the bottom is a large damper which acts as an outlet valve.

The cover is removable and closed with a rubber ring held in place by clamping bolts. There is also an admission tube for the fatty mixtures and the milk,

a thermometer and sighthole. The control is generally bilateral and the speed of the agitating device can be regulated. This apparatus is sold in three sizes : 750, 1500 and 2000 litres. The milk and fatty mixture, at exact temperature, are vigorously agitated in this churn, 200 to 300 litres of milk being used to 800 kg of the fatty mixture. After this, the water jacket is cooled, the operation being controlled by the sighthole and the thermometer. At first the mixture is nearly transparent and bright yellow, gradually the colour becomes paler and the transparency less until a thick layer is formed.

The thermometer at first shows a slight fall and then suddenly rises again by several degrees. This indicates that the fats are solidifying. When the greater part of the fat has solidified the thermometer falls again showing that the emulsion is formed and can be removed by the outlet valve while the speed of agitation is decreased. On issuing from the valve the emulsion has the appearance of a slightly liquid custard and should be completely solidified by being immediately cooled.

It is not always easy to obtain the formation of the emulsion and in this case the process is arrested at a given moment and iced water is added or morsels of ice, also frequently a certain quantity of kitchen salt. The period of churning lasts from 20 to 40 minutes. As only small quantities can be treated at a time, the apparatus must be emptied and charged several times. To avoid this inconvenience an attempt has been made to manufacture continuous churns, but without success.

The churning consists of pressing the emulsion through very small openings. The machinery for producing homogeneity is generally a mixing machine and a compression pump with several cylinders (usually 4) which presses the fat-milk mixture between two plates. The pressure is from 200 to 300 atmospheres.

(4) Cooling the margarine emulsion.

The emulsion from the churn or mixing machine is still slightly liquid, the solidification being completed by cooling. The emulsion cannot be left to cool naturally as solidification would take too long and the emulsion might break up again into its component parts. It is therefore necessary to cool it artificially as soon as it is prepared, solidify it and at the same time cut up the solid emulsion so that it will be ready for the smoothing machine. Cooling can be carried out in two ways, namely : (1) by treating the emulsion with iced water (0.5 to 1°C); (2) by pouring the emulsion in a thin layer over a cold surface. The first of these is known as the " spray process " and is the older; the other, called the " cold surface process " being more recent, though the first process is still employed in the most up-to-date factories in spite of its disadvantages. Water cooling is carried out as follows : the liquid emulsion issues from the churn and is collected in a chute where it is sprayed with jets of iced water afterwards flowing in a channel to a conveying car.

In the other process the cold surface used is frequently a cylinder, called cooling drum, cooled in the inside by brine at -18 to -20°C and rotating slowly. The

liquid emulsion arrives on this drum in a uniform layer and is solidified in one rotation. It is then removed with a scraper and falls in a thin film into the conveying car. The greatest difficulty in this process is to obtain a uniform distribution of this thin layer. There exist numerous patents on this process. To arrive at a uniform layer the emulsion is run into a wooden case, open at the top, one side of which is formed by the drum. In rotating the drum carries with it a certain quantity of the emulsion. A more uniform layer has been obtained by this method. The case has a tube very close to the cooling surface, parallel to the axis of the drum (the distance corresponds to the required thickness of the layer). The interior of the tube is slightly heated with hot water or steam. This tube removes the excess of emulsion on the drum and, being warmed, permits the emulsion to flow back. There also several other methods of cooling. An English patent proposes a cylinder rotating parallel to the drum at a distance corresponding to the desired thickness of the layer. A cylinder rotating the opposite way removes the emulsion from the case by adhesion. Other patents also exist on this process. The apparatus of Peter RAIMUND and Michel WENZEL (German patent 502 727) is intended to replace the cooling drums. The hot emulsion flows from the churns and falls at the same time as a jet of cold water on to a paddle wheel revolving rapidly in a tank of cold water. The emulsion thus solidifies in a finely divided form and flows from the surface of the tank of cold water into a chute from which it falls into the conveying cars below the apparatus.

The HUGHES and YOUNG apparatus (English patent 346 276), consists of a number of cold chambers the vertical walls of which converge at the base to form several discharging funnels. The fatty substances, previously melted and mixed when hot in a boiler fitted with agitating devices and placed above the apparatus, are driven under pressure and pulverized in the cold chambers by means of a system of blowpipes placed in the middle of the chambers which are chilled by injecting cold air.

A new apparatus permits the correct regulation of the thickness of the emulsion on the cooling drums (German patent 511 696 of Wilhelm Gotthilf SCHRÖDER), the fact being that the excess margarine removed from the surface of the drums by the present regulating systems is partially cooled and under bad conditions which render its return into the cycle of manufacture difficult. To eliminate this disadvantage only the margarine actually to be carried off and cooled should be allowed to come in contact with the drum. SCHRÖDER has achieved this by placing a new regulating apparatus round the wall of the drum. This apparatus is composed of a semi-cylindrical casing with double walls which is kept tepid by the water circulating at constant temperature inside the double walls. In the interior of the casing there is a revolving cylinder furnished with blades for stirring the emulsion of liquid margarine which circulates continuously between the churn and the casing by means of two tubes, inlet and outlet, which both open into the casing above the bladed cylinder.

The whole apparatus is placed against the wall of the cooling drum one side of the casing following the form of the drum. This side is composed of thick slats of wood which constitute, one might say the, diametral plane of the semi-cylinder and ensures the thermic insulation of the casing and the drum.

Above and along the casing is a square opening by which the margarine emulsion, centrifugated in the interior of the casing by the blades of the cylinder, can emerge. If it issued directly the surface of the drum would be always covered with margarine in a too uneven condition, as only a part of the margarine carried off by the rotation of the drum would have time to congeal during a single rotation.

In order to avoid this the orifice opens into a small accessory casing along the main casing in which is a small grooved hollow cylinder, kept tepid by the circulation of water inside. This cylinder revolves rapidly in the opposite direction to the cooling drum. A system of grooves regulated by screws allows the cylinder to be brought to the desired distance from the drum so that the layer of emulsion which passes between the grooved cylinder and the drum has exactly the right thickness. The rest of the emulsion is thrown, off still hot, by the grooves back into the circulation of the main casing without having been cooled.

The spray process is employed chiefly in Germany in the more modern factories, while the previous process is found chiefly in England and North America. With the spray process a final product is obtained containing 30 to 35 % water, which should be removed during the smoothing process until the emulsion only contains 16 %. There is also a risk that the large quantities of water used in cooling will carry off valuable substances, above all when the emulsion has not the necessary stability. These disadvantages are avoided in surface cooling. As the cooling medium is not in direct contact with the emulsion, substances are neither introduced nor carried away. It is therefore possible to determine the exact composition of the final product. With surface cooling, the removal of large quantities of water in the smoothing machines becomes unnecessary and a short smoothing is sufficient to finish the product thus reducing the length of the operation considerably.

(5) Kneading the crude margarine.

Margarine from the spray process forms a kind of coarse, clotted snow with a high water content. Margarine from the cold surface process is a fine mass, hard and flaky. After the two operations the margarine must be smoothed until its granular texture disappears and it acquires a soft consistency resembling butter in which the solid parts are not perceptible with the tongue. Margarine obtained by the spray process has to have the excess of water removed.

The fat always contains aqueous residual liquid which must be eliminated if the margarine is to have a certain stability. Also, the law prohibits a too high water content. The excess of water contained in the cooled fat is eliminated by rolling several times. The subsequent kneading gives the characteristic consistency of butter. During kneading and smoothing several additions are made to the margarine, such as common salt and other antiseptics, aromas

and substances causing frothing and browning required for culinary purposes. Other fats may also be added.

Kneading is generally performed with fluted cylinders between which the margarine is passed several times. It is afterwards left to stand for some hours and then smoothed, the remainder of the residual liquid being thus removed and in this way it is transformed into a homogeneous product.

The most simple form of machines with fluted cylinders consist of 2 cylinders worked by cog wheels and a pulley. For kneading, paddle kneading machines are most generally used. The grooves of the two cylinders fit into each other in such a way that the margarine passing between them is subjected to high pressure, after which it falls into a truck placed below the cylinders. As the margarine has to be compressed 6 times and as each time it has to be put back on the cylinders with a pallet knife, considerable labour is involved. There are also other forms of apparatus with 4 couples of cylinders linked by a mechanical conveyor. The margarine is placed by hand on the first couple of cylinders from which it is carried by an inclined worm roller to the other cylinders, and so on. The newest type of kneading machines have two couples of cylinders arranged in series, the worm roller instead of working vertically works horizontally which facilitates transport and is more economical. The machine also has a large funnel attached to the first couple of cylinders and capable of holding the entire contents of the churn.

After kneading the margarine already resembles butter though it is not yet entirely homogeneous and the different charges have to be mixed and kneaded again with the paddle kneading machine. This apparatus differs from the preceding one in that the cylinders have no grooves but have a series of paddles, thus preventing too great pressure which would injure the consistency of the margarine. During kneading on the turn table machine the necessary amount of salt is usually added. It may be said that salting is done at three periods: the first in the churn to assist the emulsion, the second on the kneading machine proper to facilitate the removal of water, the third on the turn table kneading machine to incorporate the salt. Too much salt is avoided during the first kneading which though facilitating the removal of excess water, would result in a considerable quantity of salt being lost with the water. On leaving the turn table machine each charge of the vat is a perfectly homogeneous mass, but these often differ from each other in water content which must be rendered uniform and constant. Generally the margarine from the turn table kneading machine contains rather less water than the finished product and is mixed again with water in an iron plated blender with a removable cover in order to give it the established percentage of water. Within this blender are two arms of a special shape revolving at high speed. The margarine is placed in the blender with the right proportion of water (generally in the form of skimmed milk) and the arms set in motion for a short time. The mixture is then complete. At this time preservatives are sometimes added, also starch which serves as a margarine indicator.

(6) Moulding and packing.

The margarine is now ready to be moulded. Formerly it was packed and sold in casks and barrels, but now-a-days it is sold in packets of generally $\frac{1}{2}$ kilo, weighing and packing being done at the factory. Butter moulding machines are employed for moulding the margarine into blocks and then cutting into square pieces. This is a great improvement from the point of view of hygiene and also of the preservation of the margarine.

According to K. BANDAUI there are 4 main types of margarine:—

(1) The very cheap qualities made with soya oil, hydrogenated fish oils, palm and palm kernel oils, sometimes with the addition of coconut oils. They contain almost no milk.

(2) Medium qualities, the principal constituent being coconut butter, which form 40 to 70 % of the total fats, also colza and sunflower oils. Coconut margarines are made with or without milk and form the bulk of the margarines sold on the market. As the quantity of milk used increases so the quantity of coconut oil diminishes and the quantity of hydrogenated oils and fats of animal origin is increased and at the same time the quality of the margarine is improved.

(3) Good quality margarines chiefly prepared with hydrogenated vegetable oils (ground nut and sunflower) with small quantities of animal fats. The aroma is given by adding much milk and cream.

(4) Best qualities which closely resemble natural butter. They have a high content in animal fats and contain solidified oils and coconut butter. The only oils used are those in which there is no risk of deterioration as is the case with soya oil.

VIII. — PRESERVATION OF MARGARINE

Both butter and margarine undergo changes during conservation which reduce considerably their edible value; the most to be feared is rancidity.

This process is complicated and has not yet been well defined. In the past it was thought that rancidity in fat was due to decomposition in fatty acids and glycerine, that is, a rancid fat should contain a high proportion of free fatty acid. After numerous researches it was found however, that a fat without a trace of free fatty acid could be completely rancid and *vice versa*, though as a rule rancidity is accompanied by a more or less high content in free fatty acid, which can be removed from rancid fat by a suitable process of neutralisation without the disappearance of the characteristics of rancidity. Rancidity cannot be caused by breaking up of the fats as this scission in fatty acids and glycerine is a hydrolytic process for which the presence of water is absolutely necessary. It has been found that fats may be obtained completely free from water but, which, all the same, become rancid. Without doubt the hydrolytic separation of fats favours rancidity and for that reason fats containing water, such as butter and margarine, are very subject to rancidity.

Light and oxygen in the air have the greatest influence on rancidity as these two factors together, or separately, can produce rancidity. Rancidity of fats is a saponification caused by the influence of humidity, of which only minute quantities are necessary, accompanied by oxidation and light. According to recent researches, the oxygen in the atmosphere plays the principal part in rancidity of oils and fats.

This problem and the recent progress made in knowledge of the action of light have been demonstrated by M. R. COE. The diminution of the iodine index or the increase in fatty acids in fats or oils in general, are insufficient indications for determining the rancidity of these substances, as the variations are too small and are not in proportion with the organoleptic characters.

The peroxide index, in certain cases, has varied from 23 after 400 hours of intense light to 0.5 in the dark. Oxydation is accelerated by artificial light: several hours exposure to intense light from an electric lamp produces appreciable rancidity.

Researches have been made on the influence of the wave length of light on rancidity. For this purpose coloured filters have been used and it has been found that green filters which permit radiations of 4 900 to 5 800 Å, delay rancidity more than any of the others, except of course, black. Tests made on butter which is particularly subject to rancidity, have shown that the absorption line situated at 5 461 Å is perceptibly at the limit of inactive radiations; at 5 200 to 10 000 Å rancidity develops rapidly.

The effects of humidity, air and certain catalysts have been examined at the same time as those of light. Iron and copper, divided, favour rancidity; aluminium and tin have practically no effect.

Various fats have been exposed to the air: maize and cottonseed, oils, lard, butter, etc. In all cases, the substances in receptacles covered with black or green paper remained intact while the others were noticeably rancid.

G. WOLF and G. MARTIN have contributed to the study of auto-oxidation of fats and oils used in the manufacture of margarine.

Oxidation of fats increases their acidity and reduces the iodine index. To produce oxidation, oils and fats need to be exposed to the air for a certain time previous to active absorption of oxygen (induction period). The induction period of animal and vegetable fats varies; short for animal fats, ground nut and cottonseed oils; very long for hydrogenated oils, coconut butter and vegetable margarine. Animal margarine has an induction period akin to that of butter. The addition of water to fat seems to prolong the induction period.

The melting point of these substances is not modified by oxidation. VENTILESCO and POPESCO have found that fats and oils become rancid without showing an increase in free fatty acids and that rancid fats give a reaction with oxidizable substances such as guaiacol, especially in the presence of a peroxidase like hemoglobin.

The oxygen contained in the rancid fats should only have an unstable linkage.

FAHRION has found that in fats the oxydized fatty acids are insoluble in petrol ether contrary to unoxydized fatty acids.

It is not yet established whether bacteria are concerned in the rancidity of fats. According to some authors moulds are indispensable while others maintain that bacteria have a very minor influence.

NEU is of the opinion that rancidity develops more easily when the fatty substances contain water, being due to the presence of bacteria, moulds and enzymes. Thus ketonic rancidity occurs when fats are hydrolyzed by *Aspergillus* and *Penicillium* in free fatty acids and glycerine.

In this case it is a question of a decomposition of esters of saturated fatty acids. Ketonic rancidity can be easily detected by means of salicylic aldehyde; the reaction is very apparent.

The presence of traces of iron has a highly catalysing effect on oleic rancidity. According to TSCHIRCH, the process of rancidity would be as follows:— the oleic acid oxidizes under the influence of oxygen and forms a peroxide. This is decomposed by the water into oxide and oxygenated water. At the same time ozone is formed which, with the oxide of oleic acid, gives a ozonide.

RIECHE presents the operation of this reaction in a different way which appears to conform more closely with reality. After the formation of the peroxide of oleic acid, a monoxide and oxygenated water would be produced under the influence of the water present in the oil and the water vapour in the atmosphere. The reaction continuing, the monoxide auto-hydrolyzes and gives dioxy-stearic acid. This is oxidized by oxygenated water, previously formed; which in addition causes decomposition.

The rôle of iron as a catalyst is all the more important because that element is present in the majority of fats and oils, notably in butyrin in the form of an organic compound. On the other hand, it has been found that the process of deterioration of fats takes place more rapidly in the light than in the dark.

In addition to rancidity, margarine is subject to bleaching which is the destruction of the artificial colouring matter. It is produced chiefly by day light, but also takes place in the dark when the colouring matter used is not stable in one of the multiple heterogeneous components of margarine.

The greatest danger to the preservation of margarine arises from a great number of bacteria and moulds introduced into the product; during or after manufacture moulds are the most dangerous on account of their frequency; their presence is denoted by specks and marks of blackish or greenish-blue on the surface or throughout the whole mass. Margarine contains a series of components, which are an excellent nutritive medium for all sorts of micro-organisms, such as milk casein and yolk of egg in combination with water; in addition, margarine being an emulsion, these components are in a state of extremely intimate mixture.

To sum up, it may be said that margarine is exposed to numerous risks during preservation, among which rancidity and infection by micro-organisms are the most important. It is not possible to protect it for long against rancidity, but access to light and air can be avoided as much as possible and it can be kept in cool places as heat accelerates all chemical processes and also rancidity. The best means for avoiding the presence of micro-organisms are, in addition

to the above-mentioned measures, the greatest cleanliness and the addition of antiseptics which do not influence the flavour. All apparatus in wood should also be treated with bactericides; a very diluted solution of formaline is the most suitable.

IX. — EXAMINATION OF MARGARINE

There are numerous methods of analysis of raw materials and the finished margarine, which should always be carefully examined from the organoleptic point of view, the degree of acidity and the preserving agents (including salt and artificial colouring matter) should satisfy the same exigencies as for fresh butter. In many countries, margarine must contain at least 10 % sesame oil and the content in fat should not be less than about 85 %. The investigations which are indispensable are on:— the proportion of water and fat, adulterations, sesame oil, preserving agents, unsaponifiable foreign bodies.

For determining the proportion of water and fat the following process is followed:— An accurately weighed quantity of fat (3 to 5 gm) is put in a nickel flat-bottomed evaporating dish, heated for an hour in a SOXHLET oven and weighed. The loss in weight indicates the water content. Take the residue with ether and place in a gauged bottle of 100 cm³ the neck being graduated in tenths of cm³ between the divisions 95 to 100, taking care to titrate the insoluble part of the residue as finely as possible. Leave to stand and after reading the exact volume of the ethereal solution, draw off in a pipette 25 cm³ and place in a calibrated nickel evaporating dish. After evaporation of the ether, dry for 1 hour in a steam oven and weigh the residue.

For determining the water and oil the, JUNGKUNZ apparatus or the RIETER method may also be employed.

Examination for sesame oil can be carried out, according to SOLTSIEN, by mixing equal volumes of oils and melted fat with a solution of stannous chloride, agitating once and putting the whole in a bainmarie at 50°, the temperature of which is raised slowly to 80°. In the presence of sesame oil, the solution of stannous chloride turns red. This solution is prepared by saturating dry hydrochloric acid gas in a mixture of 5 parts of stannous chloride and 1 part hydrochloric acid (p. s. 1.19) and filtering the product through asbestos. There is also the furfural reaction for sesame oil.

Preservative agents and salt may be detected by the VOLLHASE process:— To 50 gm of fat are added 10 gm of parafin and 100 cm³ of boiling water slightly alkalinized and the whole is agitated vigorously for 5 minutes. After cooling, the lump of fat is pierced and the alkaline solution is filtered off and on this various tests are made for preservatives: benzoic acid, benzoates, etc. In many countries kitchen salt is the only preservative authorised. Margarine which contains more than 0.1 % of sodium chloride should be termed salted margarine.

Investigations on starch added to margarine instead of sesame oil at the rate of 2 p. 1000, are carried out quantitatively by the VAN AERDE method by transforming the starch into dextrose and titrating with Fehling's liquor: 100 gramme

of margarine are boiled with 80 cm³ of water and 2 cm³ of concentrated sulphuric acid for 3 hours with a vertical refrigerator. Then 50 cm³ of the lower aqueous layer (corresponding to about 50 gm of margarine) is mixed with 2.5 cm³ of a solution of ferrocyanide of potassium (10.6 gm in 100 cm³ of water), plus 2.5 cm³ of a solution of stannous acetate (23.8 gm plus 3 gm of glacial acetic acid plus water to form 100 cm³). This is filtered and 22 cm³ of the quantity (corresponding to 20 cm³ of the initial solution) are boiled with 20 cm³ of Fehlings liquor and 10 cm³ of water for 2 minutes. After cooling, 3 gm of potassium iodide and 15 cm³ of diluted sulphuric acid are added, the whole being titrated with a solution of thiosulphate of sodium.

In addition to the above analyses, margarine should be analysed for its content in casein, yolk of egg, lactose, saccharose lecithine, also for melting point and the composition of the fatty mixture. Analysis of this last is almost impossible, given the complex mixture made up of 6 or 8 various oils and fats of animal and vegetable origin. W. CLAYTON has grouped margarine into 8 types (A-H) according to the analyses given in Table VII.

(A) Margarine composed essentially of animal fats: much beef fat, but no lard and an average content in oils of the coconut group, cottonseed and sesame and solidified oils.

(B) Margarine with about the same composition as A, probably containing butter and less cottonseed oil.

(C) Margarine with an entirely vegetable composition with much fatty material from the coconut oil group, an average content in sesame oil and no cottonseed or solidified oils.

(D) Margarine containing about equal parts of animal (beef fat and a very little lard) and vegetable (coconut oil group) fatty substances and with much cottonseed oil, little sesame oil and no solidified oil.

(E) Essentially vegetable margarine containing a little beef fat (no lard), much cottonseed oil and no sesame or solidified oils.

(F) Vegetable margarine containing perhaps a little butter, principally consisting of fats from the coconut oil group with much cottonseed oil and no sesame or solidified oils.

(G) Margarine analogous to F, containing perhaps a little more palm kernel oil.

(H) Margarine containing a little cottonseed oil, no solidified oil and consisting almost exclusively of animal fats (beef fat, lard).

X. — MARGARINE AS A FOOD STUFF

Margarine has been analysed from the alimentary point of view by J. KÖNIG with regard to its composition, digestibility, and combustion heat, and has been compared with butter. The results shew that its combustion heat and digestibility closely resemble those of butter. The food value co-efficient is a little less than that of butter. Butter fat is the most saponifiable of all. Margarine is often criticized for its indigestibility as it contains fats with melting points

TABLE VII. — *Analyses of CLAYTON'S 8 types of margarine.*

	A	B	C	D	E	F	G	H
Reichert-Meissl index	2.7	5.9	5.6	1.5	4.2	8.9	7.4	1.0
Polsenske index	4.6	4.8	12.0	3.2	9.1	11.4	9.3	1.0
Saponification index	212.0	214.3	242.7	210.0	234.0	242.0	234.0	198.0
Iodine index	47.71	42.17	29.1	56.1	34.1	32.2	34.0	55.6
Refractometer index (40°)	46.0	46.0	40.0	46.8	43.0	40.0	40.8	49.3
Melting point	27.3°	28.8°	20.7°	23.6°	24.8°	20.5°	21.8°	28.0°
Badouin reaction	average	average	average	average	absent	absent	average	absent
Halphen reaction	average	weak	absent	intense	intense	intense	intense	weak
Determination of beef fat	intense	intense	absent	intense	intense	absent	absent	intense
Determination of lard	absent	absent	absent	weak	absent	absent	absent	medium
Determination of nickel	positive	positive	negative	negative	negative	negative	negative	negative

much higher than butter fat, which usually melts at 27 to 30°, while certain fats, and above all certain solidified oils used in margarine manufacture, only melt at about 50°. Fats with a high melting point are naturally almost completely indigestible when consumed alone. It has been shown that pure tristearin melting at 50° passed through the digestive organs practically without change: 86 to 91 %. In the manufacture of margarine the fats with high melting points are mixed with fluid oils so that the fatty mixture of the margarine has a melting point very close to that of butter fat. Care must, therefore, be taken not to use fats with a too high melting point even if they are mixed with fluid oils, or at least the melting point of the fatty mixture should not be higher than the temperature of the body (37° C).

Generally the food value of a fatty substance is judged from three principal aspects; its content in vitamins, the number of calories it can furnish and its digestibility. This last has been determined by numerous scientists and latterly A. D. HOLMES has made digestive tests with more than 70 fats. The co-efficients of digestion of 3 kinds of margarine examined were; 97.2, 93.4 and 96.8 % respectively.

Other scientists have found the following co-efficients:—

Experimenters	Co-efficients of digestion of margarine. %.
FLURIN	94.82
MAYER	96.4 and 95.8
SNYDER	94.2
LUHRIG	97.35-97.39-97.9
WIBBENS and HINZENG	96.3
KIENEL	95.68
HULTGREN and LANDGREN	94.5

In the United States the Department of Agriculture permits packages of margarine to be marked with the following indications on digestibility and number of calories:—

*Digestibility and energy value
of edible fats used in the manufacture of margarine.*

Digestibility	Energy value per lb. (of 354 gm).
Oleomargarine	97 About 3 500 calories
Butter	97 » 3 500 »
Coconut oil	97 » 4 080 »
Groundnut oil	98 » 4 080 »
“ Oleo-oil ” (obtained from beef fat) . . .	97 » 4 080 »
“ Neutral-lard ”	97 » 4 080 »
Cottonseed oil	97 » 4 080 »

With regard to the digestibility of certain fats contained in inferior margarines, it is true that methods of analysis do not perhaps yet exist which are delicate enough to determine so complex a phenomenon, but in any event a good quality margarine has certainly a food value closely approaching that of the most expensive fatty substances.

W. D. HALLIBURTON and C. J. DRUMMOND have made some interesting experiments on the vitamin content and nutritive value of margarine and have been able to establish the following with regard to vitamin A:—

(1) Vitamin A being contained in beef fat and oleo-margarine, is found in margarine composed essentially of these raw materials.

(2) Coconut, cottonseed, ground nut, and solidified oils and fats contain hardly any vitamin A. Margarine prepared with these ingredients has not, therefore, the same nutritive value as butter.

(3) Lard and its substitutes with a vegetable oil basis do not contain vitamin A.

The lack of vitamin A has been supplied by the addition of various preparations with a high content in vitamins.

In 1926, Carl L. ALSBERG, Director of the "Food Research Institute", Stanford University, California made the following statement in an address in May, 1927: "Margarine is a wholesome, legitimate product that is making its way on its own merits. As the progress that is being made in our knowledge of the physical and chemical properties of fats and oils is applied in your industry, it is safe to predict that margarine will become increasingly more attractive to the consumer. Moreover, with the rapid advance in our knowledge of vitamins there should be no reason why margarine could not be given any desired vitamin content. . . .
 . . "In any event, margarine has its proper place in the diet and no study of the evolution of the diet of Americans or of our food supply can ignore or disregard it".

* * *

There is hardly any other food stuff that has been studied in so much detail as margarine. The attack on margarine has been tremendous as it preserves certain of the highly appreciated characteristics of butter, though it is less costly. On account of this attack, it has been subjected to a strict control on the part of the authorities so that improvements have constantly taken place in its manufacture and enormous progress has been made. Today, nothing can be said against margarine which is a pure, clean and healthy food stuff, scientifically prepared under Government inspection and it is, therefore, only just that it should take its right place both as a food stuff and also from the point of view of economy.

E. GASSER.

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ORGANISATION OF AGRICULTURAL SCHOOLS IN RUMANIA

I. — HIGHER AGRICULTURAL TRAINING

The two Agronomy Academies of Herastrau-Bucarest and Chij and also the Chair of Agronomy of Jassy are both founded on the same principles as university instruction. Higher agricultural training depends from the Ministry of Public Instruction.

The aims of higher agricultural training are many.

- (1) Study of agricultural science in the highest sense.

(2) Theoretical and practical instruction :— of teachers for agricultural instruction of different grades in secondary schools, practical agricultural schools (elementary), winter schools, Travelling Chairs – of agricultural experts for the service of the State – formation of Chambers of Agriculture, etc.

(3) Development of the science of agronomy by scientific research applied to problems of general and national (local) interest.

(4) Training of farm managers.

Conditions of admission. — On entry to the institutions of higher agricultural instruction candidates are obliged to possess a diploma of “ baccalaureat habituel ” obtained at the lycées or a “ baccalaureat agricole ” obtained through a special examination, after having passed through a secondary school (2nd grade).

If the number of candidates exceed the number of vacancies, they are obliged to pass an entrance examination.

Duration of studies. — In the two Academies and at the Chair of Agronomy, five years.

The first year is devoted chiefly to study of the fundamental sciences (natural science, physics, chemistry, mathematics) and the science of agricultural practice. The following three years are given up principally to special studies and their corresponding applications. The fifth year and the long holidays are devoted exclusively to general practical training.

Specialisation. — Students are obliged, from the third year, to follow specialised courses in one of the following sections : General and specialised agriculture — Viticulture and Horticulture — Rural engineering and Surveying — Chemistry and agricultural industries — Rural economy and Co-operation.

Doctorate. — The doctorate of agricultural “ ès-sciences ” can be obtained at both Academies and at the Chair of Agronomy.

II. — SECONDARY AGRICULTURAL TRAINING

The secondary agricultural schools are divided into three types (1) 2nd grade schools — (2) 1st grade schools for boys, agricultural schools of house-keeping for girls — (3) winter schools.

The agricultural schools of 2nd, and 1st grade and the winter schools specialise in agriculture, horticulture and viticulture.

(A) *Schools supported by the Ministry of Agriculture and Lands.*

(a) 3 schools of the 2nd grade	{	Agricultural schools of Roman
		Viticultural school of Chisinau
		Horticultural school of Bucarest
(b) 24 schools of the 1st grade	{	17 of agriculture
		5 of viticulture
		2 of horticulture
(c) 18 winter schools	{	15 of agriculture
		1 of viticulture
		2 of horticulture

(B) *Schools supported by the Ministry of Public Instruction.*

17 schools of house-keeping for girls.

(C) *Schools supported by various public authorities and by private institutions.*

- | | | |
|--|---|--|
| (a) 2 agricultural schools of the second grade | } | Agricultural school of Armasesti
(Cassa Autonomà a Monopolurilor).
Technical Lycée of Soroca (Ministry
Public Instruction). |
| (b) 7 agricultural schools of the 1st-grade; | | |
| (c) 9 agricultural winter schools; | | |
| (d) 1 horticultural school for girls. | | |

There are, therefore, in all, 81 institutions of agricultural training in Rumania 45 of which are supported by the Ministry of Agriculture, 17 by the Ministry of Public Instruction and 19 by various authorities and institutions.

As to the different types, they may be distinguished as follows: 5 schools of the 2nd grade, 31 schools of the 1st grade, 27 winter schools, 18 schools of house-keeping of the 1st grade.

Aims of the secondary agricultural schools. — The aims of the 2nd grade schools are to form, by means of a good theoretical and practical training, farm managers for medium sized properties, also the technical staff for the large agricultural estates and for the various agricultural institutions.

The 1st grade schools, for boys and girls, also the winter schools have for their aim the giving of a sound professional training to the children of farmers who will follow the same profession as their parents.

Conditions of admission. — Young persons of at least 16 years are received at the 2nd grade schools after an examination and having passed through a 1st grade agricultural school or 4 classes of secondary instruction. Young persons of at least 13 years are received into the 1st grade and winter schools who have received elementary instruction.

Duration of training. — Theoretical and practical training last 4 years in the 2nd grade schools and 3 years in the 1st grade; each school having a farm suitable for this purpose. In the winter schools the duration of theoretical instruction is 2 years with only one term per year. Practical training is given during the rest of the time at the farm schools or on the farms of the parents.

Advantages. — Certificates of studies at 1st grade schools give the holders the right to be received at the 2nd grade agricultural schools. Diplomas of studies at 2nd grade schools give the holders the right to enter for the examination for "baccalaureat agricole", in order to be received at the Agronomy Academies.

Holders of certificates and diplomas of secondary agricultural schools benefit by a reduction in military service.

Schools for farm labourers. — Attached to the farms belonging to the State and managed by the administrative department of farms and animal husbandry.

are 14 schools for farm labourers into which are received the sons of peasants who have attended 4 elementary classes.

The duration of the instruction is 3 years. In winter the pupils attend courses for half the day. The rest of the time is devoted exclusively to manual labour.

The supervision of pupils from the didactic view point is carried out by the farm over-seers, recruited from among the agronomy experts and by other specialists in book-keeping, horticulture, apiculture, mechanics, etc.

Pupils who have passed through these schools are also entitled to a reduction in military service.

III. — ELEMENTARY INSTRUCTION, COMPLEMENTARY TO AGRICULTURAL INSTRUCTION.

This complementary instruction is in course of organisation. The Ministry of Agriculture has placed the technical personnel of its external services at the disposal of elementary rural schools free of charge in order to give instruction and to supplement the practical training with complementary courses.

The Ministry of Public Instruction has also organised, with its own means, complementary courses in agriculture and utilising for this purpose the teachers from the ordinary schools who have followed courses in agriculture and who are practical farmers.

In 1932-1933 there were 208 complementary schools of agriculture with 10 038 pupils and 257 agronomy experts as teaching staff.

V. GEORGESCO

*Director of agricultural
training at the Ministry of Agriculture
and Lands of Rumania.*

MISCELLANEOUS INFORMATION

Agriculture in temperate Countries.

4th NATIONAL EXHIBITION OF AGRICULTURE IN ITALY, 1935-XIII. — The 4th National Exhibition of Agriculture will be opened at Bologna on 12 May 1935, where will be seen the first exhibition devoted to the Agricultural Corporations which, as is known, were formed in 1934.

Agriculture in tropical Countries.

THE MAYNARD GANGA RAM PRIZE. — In 1925, the late Sir GANGA RAM of Lahore (India), whose generosity is well known, donated to the Government of the Punjab a sum of 25 000 *rupees* for the constitution of a prize of 3 000 *rupees*. This prize was to be called the Maynard Ganga Ram Prize and was to be given every three years to the person who presented a discovery, invention or new practical method which would

increase agricultural production in the Punjab on a remunerative basis. Entry for this prize is open to all persons in every part of the world including government officials.

The date fixed for sending in papers was 31 December 1933. None of these papers having appeared to be of sufficient merit, the Committee administering the distribution of prizes decided to put off giving a decision for another year and to prolong the time for sending in papers to the Director of Agriculture of the Punjab, Lahore, until 31 December 1935.

Agricultural Industries.

COMPETITION FOR DEVELOPING THE USE OF BONE GLUE. — This competition, which was due to the initiative of the International Association of bone glue manufacturers "Epidos", was closed on 28 February 1934. Ten competitors divided the prize of 20 000 Swiss francs.

It results from the nomenclature of the papers awarded prizes or recompensed by the jury of the competition organised by the International Association of bone glue manufacturers "Epidos", that, in the many branches of the industry, the papers sent in for this competition show the multiple uses to which bone glue can be put.

This product can consequently be used, not only for its adhesive properties which have been well known for many years, but also in many ways for its colloidal power as follows:—

- as an emulsion stabiliser (latex, encaustica or slips in the making of ceramics);
- as a source of nitrogenous materials (manufacture of yeast);
- as a product resistant to oils and spirits (rubber);
- as a retarder to the action of acids (fixo-décapeur);
- as an agent giving certain qualities to products in which glue is incorporated (rubber, plastic materials, etc.).

All readers who are interested in any of these new applications for bone glue will obtain all information from the general secretariat of "Epidos", 40 rue du Colisée, Paris.

On account of the fruitful results of this first competition, the International Association of bone glue manufacturers « Epidos » has decided to continue its efforts for a more detailed study of the new uses for bone glue.

In consequence, in the near future, a new competition will be organised with a view to recompensing the efforts of experts in all industries capable of utilising bone glue and who can either find new markets or improve those already existing or resulting from the first competition.

Rural Hygiene.

A NEW TREATMENT FOR BURNS. — In the United States much publicity has been given to the treatment of burns with tannic acid. For the first treatment it is recommended that a bandage soaked in a freshly made solution of tannic acid of 5 % should be applied to the burn. This should be continued for about twenty hours.

The advantages of this treatment are:—

(1) the skin is tanned in the neighbourhood of the burn, thus preventing the absorption of toxins.

(2) scars show very little.

This method is in current use in the hospitals in the United States.

BOOK NOTICES (*)

Agriculture in temperate countries.

BOTEFF Sawa and KOVATSCHEFF Jossif G., *Zemledielieto w Bulgaria* (Agriculture in Bulgaria), 865 p. Sofia 1934, Printed by S. M. Staikov, price 350 leva (Summary in German, p. 845-865).

This work describes Bulgarian agriculture in detail.

After a description of the climatic, geographical and pedological conditions, followed by ethnographic remarks on the population the authors give a picture of the economic situation of Bulgarian agriculture in its various branches. There are interesting pages concerning the improvements in the system of land holding and the various systems of practical economy. Rural legislation is treated in detail.

Chapters 3-13 are devoted to agricultural technique, to the various crops cultivated and to stock-breeding. There is an important chapter on viticulture. The reader wishing to know the special characteristics of Bulgarian agriculture will find all useful information in the chapter on industrial plants, chiefly on rose growing. The authors describe the importance of this culture, methods of cultivation and gathering, the manufacture of attar of roses, cost prices of the product, exports, etc. Silk-growing, apiculture and forestry are well represented. In the chapter on the breeding of various species of animals the importance given to the breeding of buffaloes will be noticed.

Chapter 14 gives a general account of the agricultural co-operative societies. A map included in the text gives an idea of the distribution and importance of the various types of co-operative societies. Among others the co-operative societies of attar of roses and of tobacco-growing, etc. should be noted.

A long chapter describes agricultural training and experimentation. It will be learnt with interest that Bulgaria has begun to institute itinerant agricultural instructors on the German model, agricultural inspectors such as have existed for some time in France and Travelling Chairs of agriculture on the Italian plan. Bulgaria thus applies the systems which have been recognised to be advantageous in other countries. The authors give a complete list of the agricultural schools with indications on the special characteristics of each school and the number of pupils.

Finally the last chapter gives a complete list of Bulgarian bibliography concerning agriculture in that country, classified according to subjects and containing more than 1100 titles.

The book is completed by a summary and index in German.

N. v. G.

Cotton.

EMPIRE COTTON GROWING CORPORATION. SECOND CONFERENCE ON COTTON GROWING PROBLEMS. July 1934 Report and Summary of Proceedings. London, 1934, 340 pp.

The experts engaged in the growing of cotton in the various parts of the Empire met in Congress from 18 to 20 July 1934 for the purpose of discussing all the problems of cotton growing among themselves and with the most eminent representatives

(*) Under this heading are included short synopses of book received for review.

of technical and agricultural science in the metropolis. This volume contains the complete account of the conferences and discussions of this Congress, and is a valuable source of documentation on the majority of present day questions.

Under the title "plant breeding and genetics" will be found the conference on the practical application of the science of genetics to the production of new strains; on the value of interspecific hybrids from the view point of the genetist, on the effects of selection in pure lines of Sea Island cotton, autofertilised for 17 generations, on cytology in relation to selection, on the preliminary examination of new varieties, on the problems of selection of cotton in the north of Nigeria and in Kenya.

Another chapter is devoted to the conferences on methods of experimentation in the trial fields and on the statistical treatment of results obtained. Special notice must be given to the conference of J. WISHART which is a clear summary of the analysis of variation and co-variation according to the new researches of Rothamsted.

Attacks by insects, which play such an important part in the growing of cotton are discussed from a general point of view, also the influence of climatic and pedological factors, the possibilities of reducing the losses due to insects by choosing a suitable time for sowing and by propagating strains of cotton which adapt themselves to local conditions.

Two experts have treated the influence of the local flora on the seasonal variation of the "stainer". Among the diseases those of leaf-spot, which is a bacterial disease, and virus diseases, black arm and leaf curl, gave rise to long discussions.

The problems of the physiology of the cotton and the relations existing between the exterior conditions and the development of the trees are studied most carefully by F. K. JACKSON and F. G. GREGORY, who have worked, one at the Institute of plant industry of Indore, and the other at the experiment farm of Geziran, Sudan. Here again the researches seem at first sight to be purely theoretical, but have led to results of the highest importance for practical agriculture.

The characters of cotton fibre form the subject of eight conferences which will certainly interest all cotton planters. Here will be found information on the variability of the fibre in relation to its state of maturity, on impurities, on the value of fibres from the point of view of the weaver, on the new method of determining the humidity of the bales, etc.

Finally the two conferences must be noted on the pedological problems, one of which is on the physical character of the soil in relation to its fertility and the other on organic matter and crop rotation.

The very moderate price of this volume (2s. 6d) will permit it to be purchased by all who are interested in cotton production.

W. B.

Forestry.

RUBNER K., *Die Pflanzengeographisch-ökologischen Grundlagen des Waldbaus*. Dritte völlig umgearbeitete Auflage, 597 p., 173 Textabbildungen, 8 Karten im Anhang. Neudamm 1934, Verlag F. Neumann.

This treatise on the geographical and ecological factors in Forestry which contains 173 plates in the text and 8 maps in an appendix, has now reached its 3rd edition at the end of 11 years which shows the importance of the work. This edition is increased by new chapters concerning the ecological bases of forestry.

Of the 3 parts of the volume, the first treats the importance of researches on botanical and ecological geography for forestry. Important chapters will be found on the various climatic factors (air, electricity in the air, light, water, wind, etc.), the

edaphic factor and the geomorphological factors, explaining the importance and influence of these factors on the life of forest trees.

The second part of the volume gives the geography, properly so-called, of stands and treats the distribution in the past and the natural zones at present populated for a great number of forest trees.

The third part gives very useful information on the life of various species and on the sociology of forest stands.

This work constitutes a valuable manual for students of forestry and can also be useful to forestry experts as it gives information which is new both theoretically and practically and refers to the most important results of researches and recent observations made on this subject.

G. L.

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ASSEMBLÉE DES PRÉSIDENTS DES CHAMBRES D'AGRICULTURE. Séances des 23 et 24 octobre 1934. Compte rendu. s. l. n. é., [1934]. 420 p.

BOTANICAL SOCIETY OF EDINBURGH. Transactions and proceedings v. XXXI. Part III. 1933/34. Edinburgh, Neill, 1934. [XVII]-XXII; [323]- 471 p.

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COTTON YEAR BOOK OF THE NEW YORK COTTON EXCHANGE 1934. New York, New York cotton exchange, 1934. 231 p.

SIEBOLD, F. UND G. PRAHL. Silofutter, Silobau. Anleitung zum Bau von Bauernsilos nebst genauer Baubeschreibung und Materialangabe. Berlin, Parey, 1934. 51 p.

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[Yearbook of the Swedish society for the improvement of pastures and meadows].

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DIE WIRTSCHAFTLICHE SCHWEINEMAST: Anweisungen für die Praxis auf Grund physiologischer Studien. Berlin, Parey, 1934. 86 p. (Abhandlungen aus dem Gebiete der Tierhaltung von Müller-Lenhartz und G. v. Wendt. Hft. 6.)

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MONTHLY BULLETIN

OF

AGRICULTURAL SCIENCE AND PRACTICE

EDITORIAL

SPROUTING GREEN FORAGE

Except in some privileged regions with exceptionally mild climates, the problem of uninterrupted production of green forage is impossible to solve entirely. Ensilage of a part of the harvest, even if the phase of lactic fermentation is avoided, is a solution which is far from being perfect.

It is natural that an attempt should be made to relieve the farmer from the state of subjection he is in to the succession of seasons and to the occasional exaggeration of seasonal conditions such as exceptionally hard winters or periods of abnormal drought. In both cases the dearth of green forage has a disastrous effect on the health of cattle, particularly young animals in a period of rapid growth.

Provided there are sufficient stocks of grain (and these stock are at present too abundant), it is not difficult to produce, on all farms and in all seasons, green forage of good quality both rapidly and without excessive expenditure. It is enough to germinate these grains in a regular and methodical manner.

This germination, which only requires favourable conditions of temperature and moisture may be carried out on threshing floors or in malt-houses with apparatus such as commonly used for transforming barley into malt. However, it is not only a question of producing the diastasic disintegration of the starch of the grain. The objective is, in fact, to produce young plants 30 to 40 centimetres in height, the green tissues of which require for their rapid development, the use of nutritive solutions containing the elements indispensable for their growth in an easily assimilable form.

Approached from this angle, the problem has interested various experimenters, foremost among which must be mentioned the German expert, Spangenberg. In germination cabinets, very easily installed and operated, it is possible to obtain in ten days, using the appropriate nutrient solutions, a green forage which can be consumed immediately and which possesses a food value of the first quality.

As well as maize which, as a germinated green forage, has been the subject of very exact experimentation at the National Institute of Research in Dairying at Shinfield, Reading, it is easy to use numerous grains with success, notably, wheat, oats, barley, soya, cotton. It is also possible to assure the feeding of germinated green forage not only to dairy cows, but also to other farm animals including poultry thereby assuring egg production in winter. Finally, the method

may be utilised in certain cases for providing human food, young cotton shoots, for example, being an excellent salad.

All the same too high hopes must not be founded on the application of the method. It is not at all a question of supplanting the usual forage crops, but of producing by simple means a suitable fodder, particularly valuable in winter, in periods of drought and in generally arid regions.

Finally, it will be obvious to all that all new means of utilising cereal stocks merits to be examined with sympathy and interest.

Prof. GEORGES RAY.

ORIGINAL ARTICLES

THE SPANGENBERG PROCESS OF SPROUTING MAIZE FOR FODDER

*Report issued by the National Institute for Research in Dairying,
Shinfield. Reading.*

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- (4) Method of flooding and draining.
- (5) Daily output of fodder.
- (6) Percentage germination of the maize.
- (7) Effect of temperature changes.
- (8) Mould growth.
- (9) Labour required.

II. — THE SPROUTED MAIZE:

- (1) Palatability.
- (2) Chemical composition:
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- (1) Sprouted maize v. silage.
- (2) Sprouted maize v. kale and hay.
- (3) Sprouted maize v. marrow stem kale.
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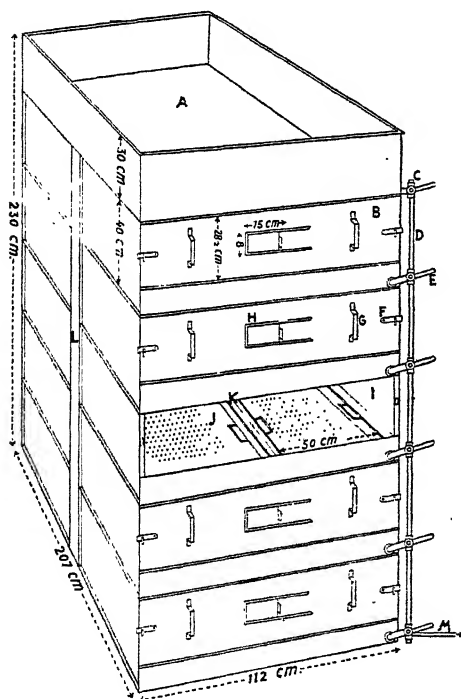
IV. — COSTS.

V. — SUMMARY.

I. — APPARATUS AND METHOD OF GROWING THE FODDER.

The SPANGENBERG process consists of a method of germinating certain seeds (e. g. maize) in cabinets under controlled conditions of moisture and temperature for a period of ten days, using a patent nutrient solution in the water. The produce, which consists of germinated seeds, shoots and rootlets together with a varying proportion of ungerminated seeds, is used as a food for stock.

FIG. 1. — *Diagrammatic View of a SPANGENBERG Apparatus.*



LÉGENDE :

- A = Tank.
- B = Metal door.
- C = Main supply tap.
- D = Feed and drainage pipe.
- E = Triple duct tap for supply and drainage
- F = Hasp.
- G = Handle.
- H = Inspection window.
- I = Compartment opened (door removed)
- J = Perforated floor
- K = Central rib.
- L = Reinforcement stay.
- M = Escape pipe.

(I) APPARATUS. — The apparatus used at the National Institute for Research in Dairying consisted of a pair of all metal cabinets each measuring approximately 8' H × 7' L × 4' W. Each cabinet was divided into five shelves with separate tightly fitting doors and surmounted with an open tank holding about 150 gallons. The trough and shelves were connected by means of water pipes and the arrangements of the taps enabled any or all of the shelves to be flooded with water from the trough or drained to the waste pipe. The two cabinets therefore, provided ten shelves in which the seeds could be germinated and since the seed were germinated for ten days it was possible to use and refill one shelf each day. The seed to be germinated was spread in square

trays about 20 inches each way and $2\frac{1}{2}$ inches deep; the bottom of each tray was perforated. Eight of these trays completely filled the floor of one shelf.

After spreading the seed for germination the doors of the shelves were closed and light was excluded and circulation of air almost eliminated.

The cabinets were housed in a brick built room about $18' \times 12'$ with two doors— one door leading to the cowshed and the other to the open air. Both doors were usually closed. There were no special arrangements for heating the room but hot and cold water was laid on to the troughs.

FIG. 2.



FIG. 3.

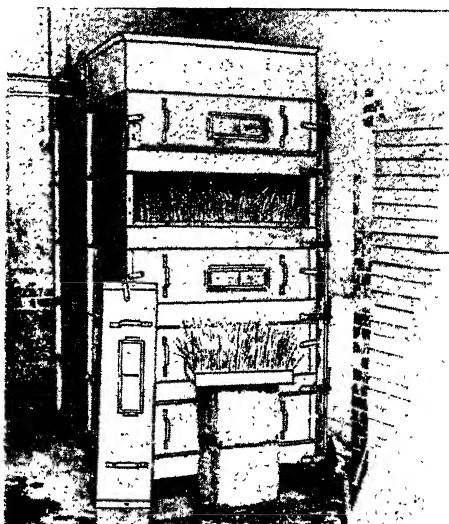


FIG. 2. — SPANGENBERG apparatus completely closed.

FIG. 3. — SPANGENBERG apparatus with the second compartment open, filled with seedling plants of sprouted maize. These are also seen on a tray, drawn from the apparatus and placed below.

(2) NUTRIENT SOLUTION. — The solution supplied by Intensive Cultivations Ltd. was a thick milky fluid with a pungent odour, the composition is covered by British Patent No. 377857 (SPANGENBERG). This fluid was diluted before use by mixing about $\frac{1}{4}$ oz. with 120 to 150 gallons of water (1 part in 80,000).

(3) PROCESS. — Control of the apparatus did not require any special technical skill, but careful and regular attention to the routine details were essential for good results. The following operations were carried out daily.

(a) The produce from one shelf, i. e. eight trays, after sprouting for ten days was taken out, rinsed with a hose to remove any slime which occasionally developed and the fodder fed to cattle.

(b) The empty trays and shelf were brushed clean and washed with hot water.

(c) The eight empty trays were refilled with a definite quantity of dry maize seed, replaced in the shelf, flooded with a nutrient solution and any dust, debris or seeds which floated on the surface removed.

(d) All shelves were systematically flooded and drained daily at intervals varied according to the number of days the seed had been germinating.

(4) METHOD OF FLOODING AND DRAINING:

1st and 2 and days:

A. M. 3 hours soaking, then drained

P. M. 3 hours soaking, then drained

3rd, 4th and 5th days:

A. M. 1 hour soaking, then drained

NOON 1 hour soaking, then drained

P. M. 1 hour soaking, then drained

6th, 7th and 8th days:

A. M. $\frac{1}{2}$ hour soaking, then drained

NOON $\frac{1}{2}$ hour soaking, then drained

P. M. $\frac{1}{2}$ hour soaking, then drained

9th and 10th days:

No soaking, trays drained.

About 700 gallons of water was used daily in the two cabinets.

(5) DAILY OUTPUT OF FODDER. — During the earlier period of using the apparatus the quantity of dry maize seed was 8 lb. per tray so that in the eight trays refilled each day 48 lb. of maize was spread for germination, the depth in the trays being about half an inch. Under these conditions, the weight of fodder removed daily varied from 18 to 21 lb. per tray, i. e. 3 to 3 $\frac{1}{2}$ times the original weight of the dry maize and the total daily output of sprouted fodder from the whole apparatus was rather less than 1 $\frac{1}{2}$ cwt.

At a later stage the quantity of dry maize used was increased to 10 lb. per tray or 80 lb. per day per shelf. With this quantity the growth was less consistent, the weight of germinated fodder varied from 25 to 33 lb. per tray and the average daily output of the whole apparatus was about 2 cwt.

The fodder thus obtained may be distributed amongst any agreed number of cows. In our experiments, the number of cows fed was five or six, and the quantity given per head ranged from 20 lb. to 38 lb. daily.

(6) PERCENTAGE GERMINATION OF THE MAIZE. — The normal germinating capacity of seed maize is in the neighbourhood of 100 % but most of the maize used for these experiments was commercial feeding maize of the small yellow variety. Its origin could not be traced and there was no guarantee that it had not been kiln dried or treated in some manner likely to diminish germination. No definite information was supplied to us as to the best kind of maize

to use, but we were given to understand that ordinary commercial maize, such as is usually ground into meal, was quite suitable.

Tests showed that the commercial seed had a germination capacity very much below 100 %, an average figure being about 70 %. In view of this, a quantity of "White Horse Tooth" seed maize was secured, which had a germination capacity of 96 % and this was sprouted in the apparatus alongside the commercial maize. The high price of seed maize makes its general use impracticable.

The proportion of seeds which germinated in the apparatus was tested from time to time. When 6 lb. of maize per tray was used the proportion of seeds which germinated ranged from 60 to 65 per cent but when 10 lb. of maize was used per tray the germination varied from 40 to 50 per cent. Under the conditions of these experiments, no difference was observed in the proportion of germinated seeds from commercial feeding maize or high grade seed maize.

(7) EFFECT OF TEMPERATURE CHANGES. — No special instructions as to control of temperature were supplied when the apparatus was installed, except a tentative suggestion that about 80° F. was ideal.

In view of the well-known influence of temperature on growth, some attempt was made to control the temperature of the sprouting maize and records were kept.

The temperature inside the cabinets was influenced by three factors:—

- (a) Room temperature.
- (b) Temperature of water used for flooding.
- (c) Heat generated by the rapidly growing seedlings.

The apparatus was used during an unusually warm summer (outside day shade temperature 70-90° F) and during a cold winter period when sharp frosts were experienced. It became obvious in the latter period that some temperature control was necessary and when the room temperature fell to 42° F. during a night frost, there was, as might be expected, a marked check in growth. To overcome this trouble the room was made free from draughts and an oil stove kept burning during the cold weather.

The temperature of the nutrient solution used for flooding the plants needed careful adjustment. Sudden excessive temperature changes in the trays of sprouting maize appeared undesirable and if water of about 100° F. (instead of about 85° F) was used in an endeavour to warm up seed which had cooled to about 50° F. during cold weather the seedlings appeared to suffer.

The heat generated as a result of the chemical changes induced by the growth processes was negligible during the first few days of germination, but became more evident as growth progressed so that shelves which contained seeds with eight days growth were often 10 or 15° F. higher in temperature than those with freshly spread seed. Injury due to use of water of too high a temperature (95 to 100° F.) was more pronounced on the seeds which had been germinated for the longest periods; the tips of the rootlets were killed and when this occurred the amount of slime at the bottoms of the trays was considerably increased.

(8) MOULD GROWTH. — During a short preliminary period before the apparatus was brought into regular use, some trouble was experienced with mould growth on the sprouted fodder. The chief causes of this appeared to be (1) too much ventilation of the cabinets due to the operators and visitors repeatedly opening the doors and (2) incorrect intervals of flooding and drainage, particularly allowing the sprouting grain to soak in the nutrient solution for long periods.

When knowledge improved as to the proper management of the apparatus very little trouble was experienced with moulds.

(9) LABOUR REQUIRED. — Management of the apparatus is not hard work but conscientious attention is needed at definite and regular intervals throughout the day from about 8 a. m. to 9 p. m. Irregularities in flooding or temperatures of nutrient solution materially reduces the growth. The total time spent by one man averaged a little over two hours per day, but the additional time which would be needed to double or treble the daily output of fodder would be relatively small.

II. — THE SPROUTED MAIZE.

After ten days germinating the normal length of the maize shoots was 10 to 12 inches with about three yellow leaves, the roots were about 12 inches long and very fibrous. The germinated grains had become shrunken. The sprouted maize formed a fibrous mass that could be torn or rolled intact from the trays.

(1) PALATABILITY. — The freshly sprouted maize is sweet and attractive in flavour and all the animals which were given the fodder ate it with obvious relish after a few days. No tests of digestibility were carried out but a few nonsprouted grains were observed in the faeces of the cows; this is a common occurrence when whole grains are fed to cattle. The sprouted maize had no noticeable effect on the consistency of the faeces.

(2) CHEMICAL COMPOSITION. — When maize seed germinates rapidly under the favourable conditions of this process, a certain amount of the carbohydrate of the original seed must be consumed to provide the energy of germination. This involves a loss of dry matter. On the other hand, the use of a nutrient solution enables the seedlings to take advantage of nitrogenous and mineral ingredients from an outside source, which when incorporated into the growing parts of the seedling, should tend to balance this loss and also increase the amounts of some constituents, such as the crude protein and ash, of the original seed. The course of these changes was therefore followed by chemical analyses. The samples of original seed and of each day's sprouting consisted of 100 seeds or seedlings taken at random. There was a certain percentage of ungerminated seeds mixed with the seedlings but these were not included in the samples taken for analysis. The composition of the dry matter of the original seed was taken as the basis of studying the change in the amount of nutrients with each successive day of sprouting.

(A) *Variations in wet weight and in dry matter during successive days of sprouting.* — Table I gives the wet weight and the weight of dry matter in 100 seeds or seedlings and the changes in these amounts calculated on the basis of 100 parts of original seed. Two distinct samplings several days apart were carried out and the results are shown separately as (a) and (b) in Table I.

TABLE I. — *Variations in weight of 100 seeds or seedlings of maize in the course of germination.*

1 No. of days of sprouting	2 Weight of 100 seed of seedlings		3 Expressed as percentage of seed		4 Weight of dry matter		5 Expressed as percentage of dry matter of seed	
	a	b	a	b	a	b	a	b
0.	25.2	26.5	100	100	21.7	21.8	100	100
1.	33.0	33.5	131	127	21.8	21.8	101	100
2.	36.3	36.3	144	137	22.1	22.1	102	101
3.	39.5	39.3	157	149	22.6	22.8	104	105
4.	51.1	41.6	203	157	23.3	20.8	101	95
5.	* 113.7	55.0	451	208	20.7	19.4	96	89
6.	75.0	76.7	301	252	20.1	18.7	93	86
7.	89.2	79.1	354	299	20.1	19.1	93	87
8.	101.8	115.3	404	436	18.4	17.6	85	80
9.	130.7	111.2	519	422	17.0	14.5	79	67
10.	111.3	121.0	442	458	16.9	15.9	78	73

* Seedlings sampled in a very wet condition.

Table I shows that the wet weight increases to about $4\frac{1}{2}$ times that of the original seed during the sprouting period but that there is a loss of about a quarter of the dry weight of the seed. (In practice, the sprouted material was roughly $3\frac{1}{2}$ times the weight of dry seed, this being due to the fact that in the analyses the ungerminated seed was not taken into account). That is 100 lb. of maize seed in which every seed germinates will give 450 lb. of sprouted fodder containing 75 lb. of dry matter. The increase in dry weight during the first four days may be due to hydration of the starch previous to germination.

(B) *Change in crude protein, true protein and mineral matter during sprouting.* — The loss of dry matter during sprouting (mostly as starch) means an arithmetical increase in the content of some of the nutrients in the dry matter of the sprouted product. Thus with 25 per cent loss in dry matter, if there is no loss of crude protein, seed with 9.7 per cent of the dry matter as crude protein should give a sprouted product containing $9.7/0.75 = 12.9$ per cent of crude protein in the dry matter. It was interesting to follow this increase and also to find out if the sprouted material increased its original crude protein content at the expense of the nitrogenous material of the nutrient solution. The change in "true protein" content was also examined. Table 2 gives the results.

TABLE 2. — *Variations in the protein content in the course of germination.*

1	2	3	4	5	6	Values in col. 5 values in Col. 5 a in Tabel
N° of days of sprouting	Crude Protein in dry matter	Percent crude pro- tein percent of drymatter of seed (Table 1, Col. 5 a)	Expressed as percentage of crude protein of original seed	Percentage of true protein in dry matter	True protein as percentage of crude protein	
0	9.67	9.67	100	9.67	100	
1	9.67	9.77	101	9.67	100	100
2	9.45	9.62	100	9.46	100	100
3	9.87	10.30	107	9.64	98	104
4	9.99	10.75	111	9.70	97	104
5	10.59	10.13	105	9.70	92	108
6	11.32	10.51	109	9.61	85	95
7	11.57	10.76	111	9.83	85	95
8	13.02	11.04	114	11.80	91	104
9	13.72	10.77	111	12.71	92	104
10	14.37	11.21	116	13.17	92	106

Table 2 shows that in the loss of dry matter during ten days germination no crude protein is lost. On the contrary there is a gain of crude protein over that originally present in the ungerminated seed. Thus 100 lb. of seed dry matter contains 9.7 lb. of protein but after germination for ten days the sprouted product obtained from 100 lb. of seed dry matter now contains 11.2 lb. of crude protein, an increase of 16 per cent. Determination of the *true protein* reveals that the amount remains practically constant throughout the germination period, the increase in crude protein being in the form of non-protein nitrogenous compounds or "amides" which have been derived from the nutrient medium.

The amount of true protein in the crude protein is of the same order as is found in good grass (80-85 per cent) and much higher than is found in various forms of silage (50-75 per cent).

The mineral constituents of the nutrient medium are also partially absorbed into the final product to give a feeding stuff considerably richer in lime and phosphoric acid. The ash increases from 1.03 per cent and in the seed dry matter to 3.06 per cent of the sprouted dry matter. The lime (CaO) content is increased six times (from 0.023 to 0.138 per cent) and the phosphoric acid (P_2O_5) nearly doubled (from 0.730 to 1.237 per cent).

The changes in composition during germination may be summarised as an increase of 4.5 times in wet weight, a decrease of roughly 25 per cent in dry matter and a 16 per cent increase in crude protein while the true protein remains constant. The ash is also increased especially in its content of lime and phosphoric acid.

The details of composition noted above refer to the seeds which have germinated. The small proportion of seeds which do not germinate will cause a small lowering of the effects stated since they remain practically of the same composition as the original seed.

(C) *Vitamin C content.* — Only one test of the vitamin C content of the sprouted maize was made. The results which are given in Table 3 contrast the maize with marrow stem kale which was being fed to cows on the farm, and with orange juice. A small amount of vitamin C appears to be synthesised in the maize during the sprouting process but kale is shown to be a much richer source of this vitamin. The figures in Table 3 were obtained by estimating the vitamin C content of a group of foods by the chemical test of Harris and Tillmans using 2 : 6 dichlorophenol-indophenol.

TABLE 3. — *Vitamin C content of various vegetable products.*

Substance tested	Vitamin C	
	Expressed as m. g. per g. m	Expressed as potency in terms of orange juice
Dry Maize	—	—
Sprouted Maize	0.093	0.18 : 1
Kale leaf	1.49	3.00 : 1
Kale stem	0.64	1.30 : 1
Orange juice	0.5	1 : 1

III. — EXPERIMENTS ON THE FEEDING VALUE OF SPROUTED MAIZE.

The chief object of the experiments was to test the feeding value of sprouted maize as a component of a normal ration for dairy cows under English farming conditions.

(1) SPROUTED MAIZE v. SILAGE: *Experiment No. 1.* — This test was carried out during the summer of 1933 when a condition of drought existed and the pastures were parched and bare.

Five experimental milking cows were used and five others kept as controls. Some of the cows were in an advanced stage of lactation but every effort was made to group the cows as evenly as possible and to manage and feed then under identical conditions apart from the period under test.

The experiment continued for seven weeks. During the first two weeks all cows were fed the same ration and this was followed by a period of five weeks when the five control cows were maintained on the same ration and the five experimental cows fed a ration in which 28 lb. of silage was replaced by 6 lb. (dry weight) of sprouted maize.

The average nutrient content of the two foods are shown in Table 4, the composition being based on the values published in the Ministry of Agriculture Bulletin No. 48 "Rations for Live Stock".

TABLE 4. — Comparison (in lb.) of nutritive elements in non-sprouted maize and vetch and oat silage.

	Dry Matter	Oil	Crude Protein	Crude Protein	Pure Protein	Starch Equivalent
Maize before sprouting 6 lb.	5.2	0.26	0.59	0.47	0.44	4.66
Vetch and oat silage 28 lb.	7.6	0.34	0.95	0.62	0.31	3.58

The two values which are usually considered important for rationing dairy cows are the starch equivalent and the protein. It will be observed that the starch equivalent of the dry maize is higher, but analyses of the sprouted fodder indicated that the carbohydrates were reduced during the sprouting process to an extent which would make the two foods about equal in starch value. The digestible protein values of the two foods are very similar, but the sprouting of the maize led to a slight increase in the crude protein content.

The following records were kept of the cows:

Live weight — Milk yield — Fat percentage of the milk — Solids-not-fat percentage of the milk — Chloride percentage of the milk.

The results which are given in Table 5 are expressed by taking the production during the two preliminary weeks as a base line and showing the average increase or decrease during each of the experimental weeks. (a) Silage or control groups of cows (b) Sprouted maize group.

Conclusions. — Definite conclusions cannot be drawn from this experiment owing to the small number of animals used and a certain number of uncontrolled conditions. The results however, give a favourable impression of the value of sprouted maize for feeding dairy cows.

It will be observed that 6 lb. (dry weight) of sprouted maize gave slightly better results than 28 lb. of good quality oat and vetch silage in milk yield, solids content of the milk and live weight of the cows.

(2) SPROUTED MAIZE V. KALE AND HAY: *Experiment No. 2.* — This test was carried out from September 3rd to October 15th 1933 and the general weather conditions were similar to those noted in the first experiment, i. e. hot weather with pastures scorched and bare.

Five cows were fed sprouted maize for a period of four weeks. It was not possible to keep the control animals on identical nutrients owing to the interaction of other experiments but four of the cows used as controls in Experiment No. 1 were fed rations which provide interesting and useful comparisons.

Table 6 which gives notes of the rations of the two groups of cows shows that during the experimental period a ration containing 21 lb. silage and 6 lb. sprouted maize was compared with a ration containing 10 lb. meadow hay and 35 lb. kale. The nutrient content of the two rations are noted in Table 7.

TABLE 5. — *Increments during the Experimental Period.*

	Mean weekly production during preliminary period 2 wks.	Increments during the Experimental Period				
		1st week	2nd week	3rd week	4th week	5th week
<i>Milk yield.</i>						
Silage group	205.45 lb.	— 5.98 lb.	— 11.00 lb.	— 12.82 lb.	— 20.78 lb.	— 36.92 lb.
Sprouted maize group .	159.80 lb.	+ 1.45 lb.	+ 7.10 lb.	+ 7.96 lb.	— 11.00 lb.	— 22.28 lb.
Advantage of sprouted maize group . . . . .	...	+ 7.43 lb.	+ 18.10 lb.	+ 20.78 lb.	+ 9.78 lb.	+ 14.64 lb.
Production value of maize group when control = 100	100.00	103.93	110.35	111.98	103.58	104.88
<i>Fat Percentage.</i>						
Silage group	3.87	— 0.112	— 0.142	— 0.037	— 0.057	— 0.100
Sprouted maize group .	3.63	— 0.135	— 0.132	+ 0.020	+ 0.232	+ 0.286
Advantage of sprouted maize group . . . . .	...	— 0.023	+ 0.010	+ 0.017	+ 0.175	+ 0.186
Production value of maize group when control = 100	100.00	99.20	100.09	100.42	104.82	105.13
<i>Solids-not-Fat Percentage.</i>						
Silage group	8.85	+ 0.012	+ 0.072	+ 0.104	+ 0.180	+ 0.254
Sprouted maize group .	8.86	+ 0.093	+ 0.168	+ 0.254	+ 0.332	+ 0.420
Advantage of maize group . . . . .	...	+ 0.081	+ 0.096	+ 0.154	+ 0.152	+ 0.166
Production value of maize when control = 100	100.00	100.91	101.08	101.71	101.69	101.82
<i>Chloride in 100 c.c.</i>						
Silage group	0.104	— 0.001	— 0.002	— 0.002	+ 0.001	+ 0.009
Sprouted maize group .	0.104	— 0.003	— 0.006	— 0.006	— 0.002	+ 0.007
<i>Live Weight.</i>						
Silage group	1275 lb.	...	...	...	...	+ 1 lb.
Sprouted maize	1267 lb.	...	...	...	...	+ 32 lb.

TABLE 8. — *Increments during the Experimental Period.*

	Mean weekly production during preliminary period 2 weeks	Increments during the Experimental Period			
		1st week	2nd week	3rd week	4th week
		lb.	lb.	lb.	lb.
<i>Milk Yield.</i>					
Kale group	190.12 lb.	— 8.30	— 15.40	— 12.48	— 23.42
Sprouted maize group . . .	176.16 lb.	— 4.56	— 9.20	— 10.60	— 22.32
Advantage of sprouted maize group		+ 3.74	+ 6.20	+ 1.88	+ 1.10
Production value of maize group when control = 100	100.00	101.65	102.72	100.27	98.96
<i>Fat Percentage.</i>					
Kale group	3.58	+ 0.015	+ 0.153	+ 0.115	+ 0.010
Sprouted maize group . . .	4.00	— 0.034	— 0.022	— 0.120	+ 0.276
Advantage of sprouted maize group		— 0.049	— 0.175	+ 0.005	+ 0.266
Production value of maize group when control = 100	100.00	98.74	95.38	99.80	106.60
<i>Solids-not-Fat Percentage.</i>					
Kale group	8.83	+ 0.090	+ 0.200	+ 0.290	+ 0.190
Sprouted maize group . . .	9.11	+ 0.026	+ 0.146	+ 0.281	+ 0.340
Advantage of sprouted maize group		— 0.064	— 0.054	— 0.009	+ 0.150
Production value of maize group when control = 100	100.00	99.29	99.38	99.76	101.55
<i>Chloride in 100 c. c.</i>					
Kale group	0.110	+ 0.006	no test	+ 0.005	+ 0.007
Sprouted maize group . . .	0.100	+ 0.002		+ 0.002	+ 0.008
<i>Live Weight.</i>					
Kale group	1271 lb.	...	...	...	— 9 lb.
Sprouted maize group . . .	1158 lb.	...	...	...	— 20 lb.
Advantage of sprouted maize group . . . . .		...	...	...	— 11 lb.

dicates that a ration containing 21 lb. good quality silage and 6 lb. (dry weight) of sprouted maize proved approximately equal to a ration containing 10 lb. good meadow hay and 35 lb. marrow stem kale.

(3) SPROUTED MAIZE V. MARROW STEM KALE: *Experiment No. 3.* — This experiment was carried out during the ten weeks period November 5th, 1933 to January 14th, 1934. In a normal year little or no grass would be available at this time, but November 1933 was a mild month and the pastures had much more grass than usual so that it was not considered necessary to feed a full winter ration to the animals used in this experiment till December 10th, 1933.

Six cows were used as experimental animals and six kept as controls; the ages, stage of lactation and initial milk yields are shown in Table 9.

TABLE 9. — *Details of cows used for experiment.*

Name of cow	Group	Breed	Number of calves	Date of last calf	Average weekly milk yield during preliminary period
Winsome 7	Control	Shorthorn	1	6-IX-33	202 lb
Carlet 3	"	"	3	1-X-33	335
Cora 1	"	"	2	19-IX-33	308
Cora 2	"	"	1	23-VIII-33	123
Pearl	"	"	8	13-VIII-33	310
Venus 5	"	Guernsey	1	25-IX-33	166
Campion 2	Experimental	Shorthorn	5	14-VIII-33	242
Lily 4	"	"	2	2-X-33	177
Lottie 6	"	"	1	7-X-33	159
Patricia	"	"	7	25-V-33	238
Peach 5	"	"	4	19-IX-33	241
Venus 4	"	Guernsey	1	6-X-33	198

The general plan of the experiment was:

(1) a preliminary period of two weeks when both groups of were fed alike.

(2) an experimental period of six weeks when then the ration of the experimental animals included sprouted maize, while the controls remained on their previous diet.

(3) a final period of two weeks when both groups received the same original rations.

It will be observed that the quantity of sprouted maize fed per cow was increased on December 11th from 8 to 12 lb. This change was made when a larger quantity of sprouted maize became available, as a result of germinating a greater weight per tray in the cabinets. As noted elsewhere, the effect of growing the larger weight of maize reduced the percentage germination and yielded a less satisfactory, product. It is not certain whether this factor had

TABLE IO. — *Summary of rations during the course of the experiment.*

	Control group (kale)	Experimental group (sprouted maize)
Preliminary control period ending November 19, 1933.	Hay 7 lb. Kale 35 lb. Concentrated foods: 2 lb. for first gallon; 3 1/2 lb. for each subsequent gallon. Grazing moderate pasturage.	Hay 7 lb. Kale 35 lb. Concentrated foods: 2 lb. for first gallon; 3 1/2 lb. for each subsequent gallon. Grazing moderate pasturage.
3 weeks Experimental period ending December 10th, 1933.	Hay 7 lb. Kale 35 lb. Concentrated foods as above. Grazing moderate pasturage.	Hay 7 lb. Sprouted maize (dry weight) 8 lb. Concentrated foods as above. Grazing moderate pasturage.
3 weeks Experimental period ending December 31st, 1933.	Hay 12 lb. Kale 35 lb. Maize germ meal 2 lb. Concentrated foods: 3 1/2 lb. for each gallon after the first. Grazing negligible.	Hay 8 lb. Sprouted maize (dry weight) 12 lb. Concentrated foods: 3 1/2 lb. for each gallon after the first. Grazing negligible.
2 weeks final control period ending January 14th, 1934.	Hay 12 lb. Kale 35 lb. Maize germ meal 2 lb. Concentrated foods: 3 1/2 lb. for each gallon after the first.	Hay 12 lb. Kale 35 lb. Maize germ meal 2 lb. Concentrated foods: 1/2 lb. for gallon after the first.

TABLE II. — *Comparison (in lb.) of nutritive elements in the Controls' ration and in the Experimentals' ration.*

Control	Dry Matter	Oil	Crude Protein	Digest. Crude Protein	Digest. Pure Protein	Starch Equivalent
<i>Controls.</i>						
Hay 12 lb.	10.3	0.30	1.16	0.65	0.46	4.44
Marrow stem kale . . 35 lb.	5.0	0.07	0.84	0.63	0.26	3.22
Maize germ meal . . . 2 lb.	1.8	0.23	0.42	0.37	0.29	1.56
Total . . .	17.1	0.60	2.42	1.65	1.01	9.22
<i>Experimentals.</i>						
Hay 8 lb.	6.8	0.20	0.78	0.43	0.30	2.96
Maize (before sprouting) 12 lb.	10.5	0.53	1.19	0.95	0.89	9.31
Total . . .	17.3	0.73	1.97	1.38	1.19	12.27

any influence on the results but the decrease in the milk yields of the experimental cows tended to be more accentuated when the allowance of sprouted maize was increased.

The chemical composition of the control and experimental rations during the three weeks ending December 31st, 1933, when no grass was available are shown above. The composition of the foods is taken from the average values noted in the Ministry of Agriculture Bulletin No. 48 "Rations for Live Stock".

A chemical examination of the sprouting maize indicates that the experimental ration supplied slightly more crude protein and slightly less starch equivalent than is shown in the above statement.

In this case experimental conditions were sufficiently consistent to warrant a statistical examination of the results. In Table 12 (see page 78) the variation in the milk yields of the two groups during the experimental period from those of a two week preliminary period are set out. Similar data regarding fat percentage and solids-not-fat percentage are also given. For each group the standard error of these variations are included in the table.

In milk yield and percentage of solids-not-fat there was a slight advantage in favour of the control cows, while the fat percentage of the milk and the live weight of the cows gave a slight advantage of the sprouted maize. None of the differences were statistically significant and hence it is impossible to conclude from this experiment that the ration containing sprouted maize was better or worse than that of the control ration.

(4) VITAMIN A AND C CONTENT OF THE MILK. — Tests of the vitamins A and C were carried out by the Chemical Department of the Institute. Samples of the mixed milk of the control cows were compared with samples of the mixed milk of the experimental cows on two separate occasions:

(a) On December 18th, 1933, which was four weeks after the cows had commenced their experimental diet.

(b) On January 18th, 1934, which was nearly three weeks after both groups of cows had resumed the control diet (kale).

Vitamin A content of the butter was measured, after saponification, by the Carr-Price reaction with antimony trichloride and was expressed in Lovibond blue units in addition the yellow colour of the butter was estimated in a Lovibond Tintometer.

The results are noted in Table 13 (see page 80).

The tests indicate that all the samples of milk contained normal amounts of vitamin A and C and that there was no significant difference in the samples from the two groups of cows. No tests were made of the vitamins other than A and C.

TABLE 12. — *Sprouted*

	Mean weekly production during prelim. period of 2 weeks	Increments during	
		1st week lb.	2nd week lb.
<i>Weekly Milk Yield.</i>			
Control group (kale)	240.7 lb.	-14.67 ± 2.08	-20.93 ± 3.45
Experimental group (maize)	209.2 lb.	-13.38 ± 2.45	-24.27 ± 4.51
Advantage of sprouted maize group		+ 1.29	- 3.34
Production value of maize group when control = 100	100.00	99.68	96.83
<i>Fat Percentage.</i>			
Control group (kale)	3.75	+0.017 ± 0.083	+0.235 ± 0.159
Experimental group (maize)	3.55	+0.240 ± 0.070	+0.167 ± 0.078
Advantage of sprouted maize group		+ 0.223	- 0.068
Production value of maize group when control = 100	100.00	106.28	100.86
<i>Solids-not-Fat Percentage.</i>			
Control group (kale)	9.20	-0.007 ± 0.052	+0.072 ± 0.049
Experimental group (maize)	9.31	-0.068 ± 0.068	-0.082 ± 0.041
Advantage of maize group		- 0.061	- 0.154
Production value of maize group when control = 100	100.00	99.35	98.35
<i>Average Live Weight.</i>			
Control group (kale)	1103 lb.	...	...
Experimental group (maize)	1118 lb.	...	...
Advantage of maize group . . . . .		...	...

IV. — COSTS.

The circumstances under which the apparatus was used did not permit the collection of accurate data on the cost of production of sprouted fodder. The details of equipment and operation already noted however, indicate the main items of cost and show that the expenditure incurred will vary with local conditions. The chief items of cost are as follows:

(1) Sprouting cabinets and nutrient solution. These must be purchased from Intensive Cultivations Ltd. and no information is at present available as to the price at which these may be purchased in this country.

(2) A new building or the adaptation of an existing building to house the cabinets and maintain a suitable temperature.

Maize Experiment No. 3.

experimental period			Increment during final control period		
3rd week lb.	4th week lb.	5th week lb.	6th week lb.	7th week lb.	8th week lb.
-24.57 ± 3.09 -30.28 ± 5.61 $- 5.71$ 95.26	-26.37 ± 4.56 -42.80 ± 6.47 $- 1.643$ 89.33	-28.28 ± 5.33 -44.68 ± 7.30 $- 1.640$ 89.11	-31.12 ± 8.75 -48.77 ± 4.93 $- 17.65$ 88.08	-50.88 ± 11.13 -59.02 ± 7.24 $- 8.14$ 91.03	-46.87 ± 10.39 -58.93 ± 6.55 $- 1.206$ 89.20
$+0.077 \pm 0.090$ $+0.073 \pm 0.170$ $+ 0.178$ 100.15	$+0.080 \pm 0.089$ $+0.603 \pm 0.409$ $+ 0.523$ 114.55	-0.090 ± 0.122 $+0.252 \pm 0.117$ $+ 0.342$ 109.73	-0.198 ± 0.120 -0.108 ± 0.141 $+ 0.090$ 102.36	-0.022 ± 0.090 $+0.163 \pm 0.140$ $+ 0.185$ 105.21	$+0.003 \pm 0.108$ $+0.195 \pm 0.096$ $+ 0.192$ 105.41
$+0.072 \pm 0.033$ $+0.027 \pm 0.077$ $- 0.045$ 99.51	$+0.037 \pm 0.041$ -0.133 ± 0.074 $- 0.170$ 98.18	$+0.122 \pm 0.043$ -0.050 ± 0.104 $- 0.172$ 98.15	$+0.117 \pm 0.019$ $+0.050 \pm 0.120$ $- 0.067$ 99.28	$+0.070 \pm 0.029$ -0.055 ± 0.138 $- 0.125$ 98.66	$+0.162 \pm 0.034$ $+0.107 \pm 0.104$ $- 0.269$ 102.94
...	...	...	+ 8 lb.	...	...
...	...	...	+ 34 lb.	...	...
...	...	...	+ 26 lb.	...	...

(3) Water for flooding the cabinets, provision for heating the water and for removal of waste water or collection for repeated use.

(4) Installation of cabinets.

(5) Maize or other seed sprouting.

(6) Labour.

When the costs under the above items can be determined the cost per ton of maize fodder can be stated. The report on the feeding value of the fodder provides a basis for comparison with other farm foods.

At the same time since the quantity of maize seed used and the weight of fodder produced from a given weight of maize are known, it is possible to calculate the cost of seed per ton of fodder and also to make an estimate of labour costs. It was found that the weight of fodder was 3 to 3 ½ times the weight of

TABLE 13. — *Results of tests for vitamins A and C in the milk.*

	During experimental feeding		18 days after experimental feeding ceased	
	Control cows	Experimental cows (maize)	Control cows	Experimental cows
<i>Vitamin A.</i>				
Yellow colour in $\frac{1}{4}$ cm. cell. . . .	3.3	3.0	2.3	2.5
Blue units per gm. of butter . . .	4.2	4.6	4.0	4.4
<i>Vitamin C.</i>				
Mg. per ml. of milk.	0.0218	0.0223	0.02	0.0171
Potency in terms of orange juice .	0.0417 : 1	0.0446 : 1	0.04 : 1	0.0342 : 1

the maize seed, hence 1 ton of fodder was obtained from say 6 cwt. maize. Where maize costs 5/- per cwt. delivered to the farm the cost of seed per ton of fodder will be 30/-. The labour requirements for the two cabinets (one unit) which we had installed amounted to fully 2 hours daily but this plant is too small to be used as a basis for calculating labour costs. If six cabinets (three units) were in use, producing about $4\frac{1}{2}$ cwt. of fodder daily, we estimate the time required would amount to three hours daily, or fifteen hours per ton of fodder. If the labour cost is 1/- per hour then the cost per ton of fodder will be 15/-; if 9d. per hour, it will be 11/-, hence the cost of seed and labour per ton of fodder will be approximately 41/3 to 45/-; to this amount must be added the other overhead charges.

The third experiment showed that a given weight of the maize fodder was slightly superior in feeding value to the same weight of marrow stem kale. If we assume that 2 lb. maize fodder is the equivalent of 3 lb. marrow stem kale (and this is a liberal assumption) then we arrive at the conclusion that, so far as British or similar conditions are concerned, if kale or a succulent food of similar type can be produced at less than 27/6 per ton it will be cheaper than sprouted maize fodder. There are few actual records of the cost of producing kale and similar foods but the evidence available indicates that the maximum cost is about 20/- per ton, or say 60 to 70 per cent of the minimum cost of maize fodder.

V. — SUMMARY.

(1) A description is given of the apparatus and methods used for producing sprouted fodder.

(2) Analytical results are given which show the chemical changes which occurred in the seed maize during the sprouting process.

(3) Experiments with dairy cows to test the feeding value of the fodder indicate no significant difference between sprouted maize and other good farm food containing equal nutrients. The chemical composition of sprouted maize, therefore, provides a reliable criterion of its food value.

(4) There is no evidence that the fodder is superior to marrow stem kale in influencing the vitamin A and C content of milk.

(5) As certain data are not available, it is impossible to give a detailed costings for the fodder. The experiments, nevertheless, indicate that even if nothing is charged for plant, chemicals for preparing the nutrient solution, and water, the minimum cost of the fodder would be approximately 27/- per ton or some 40 per cent greater than the cost of marrow stem kale or similar food.

APPENDIX

TEXT OF THE ENGLISH PATENT DESCRIBING THE SPANGENBERG PROCESS.

Patent specification.

Convention Date (Germany): Nov. 1, 1930.

Application Date (in United Kingdom): Nov. 2, 1931.

Complete Accepted: Aug. 4, 1932.

COMPLETE SPECIFICATION.

Improvements in or relating to the manufacture and use of nutrient solutions for accelerating the germination and/or growth of seeds and plants.

Paul SPANGENBERG, a German citizen, of Hessestrasse 25, Eisleben, formerly of Berlin-Wilmersdorf, Germany, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The present invention relates to improvements in or relating to the manufacture and use of nutrient solution for accelerating the germination and/or growth of seeds or plants.

It has previously been proposed to subject seeds to artificial germination by means of nutritive substances such as solutions of super phosphate containing small portions of potassium phosphate, ammonium chlorate and other substances.

It is an object of the present invention to provide a method of manufacturing a nutrient salt solution by means of which the germination and growth of seeds without earth can be accelerated artificially to a much greater extent than has been possible hitherto.

According to the present invention I provide a method of manufacturing a nutrient solution for accelerating the germination and/or growth of seeds or plants characterised by incorporating one or more nitrogenous inorganic substances including a nitrogen containing acid with one or more carbon containing organic substances in aqueous solution.

According to the present invention also I provide a method of treating seeds to accelerate the germination and/or growth thereof characterised by placing the seeds in a thin layer in a container having means for passing liquid therethrough, covering the seeds completely with a solution produced by the above method and subsequently irrigating the seeds with reduced quantities of solution so that only the roots of the top-most seeds are covered.

In this process air and light are preferably excluded or the air may be replaced by a nitrogen or carbon containing gas. The germination is favoured if the seeds are first exposed to irradiation for example by rays from a quartz lamp. Suitable nitrogen containing acids are for example nitric acid and nitrous acid. Suitable constituents of the solution are for example, lime, sugar, nitric acid, urea and potassium phosphate. The lime serves particularly as a fertiliser, the sugar serves as a carbon carrier for the cellular structure of the plant, and the nitric acid and urea serve to transmit nitrogen. It will be understood of course that the lime need not be present as such in the final product but may be present as calcium nitrate owing to the action of the nitric acid.

In order that the invention may be well understood, the following preferred method of carrying out the invention will now be given by way of illustration only.

By way of example a solution may be prepared using the following constituents in the following proportions (in grammes):

Lime	100	Free nitric acid	200
Sugar	500	Water	500
Water	200	Urea	100
Potassium phosphate, preferably dibasic	500	Boron	2
		Water	500

The first step consists in disintegrating the unslaked lime and mixing in with the sugar whereupon 200 grams of water are slowly added to this mixture so as to slake the lime and cause the exothermic heat set free thereby to convert the sugar into caramel. The substance thus obtained represents a pastelike or gelatinous mass in which no solid constituents should be found.

Then the nitric acid is added, and the considerable heat developed thereby causes the gelatinous mass to dissolve into a liquid to which the potassium phosphate is added, the addition of the latter constituent being preferably effected alternately with that of additional 500 grams of water before the solution has cooled down. By slow stirring the thick liquid can be kept in a less viscous condition, the 500 grams of water being added during the stirring or afterwards.

According to the purity of the lime, a further addition of nitric acid up to 150 grams can be made to further the solubility of the lime. A larger portion of nitric acid will prevent the solution procured from this mixture with water for the treatment of the seeds from acquiring a slimy state so as to render subsequent rinsing of the germinated seeds or vegetable matter obtained unnecessary.

Urea and boron are added next, it being possible to substitute manganese for boron. In order to prevent subsequent hardening of the gelatinous paste, an additional quantity of 500 grams of water is added, or urea and boron may be dissolved first in a part of the remaining water and then added to the mixture. The jelly thus procured may be kept in suitable containers with the air excluded. For extended storing a preservative may be added. Any suitable preservative may be employed such as one of the kind used for preserving jellies and viscous liquids, for example salicylic acid. In order to prevent the growth or formation of moulds when using the diluted solution, a dilute aldehyde solution such as formaldehyde solution may be added to the prepared treating solution. The nutrient salt solution resulting from the composition stated above is suited particularly for accelerating the germination and growth of maize, and the constituents of the composition may be varied for other kinds of seed. To illustrate the comprehensive character of the applicability of the invention the examples stated below give the compositions for use in treating a few other seeds.

Constituents of a solutions for lupines (in grams)

Lime.	500	Potassium phosphate.	50
Sugar	200	Albuminous substances soluble	
Nitric acid	100	in water	25
Superphosphate	1000	Potassium silicofluoride.	5
Chlorate of manganese	5	Water.	3000
Ammonium phosphate	10		

Constituents of a solution for Soya Beans:

Similar to the above.

Costituents of a solution for oats (in grams).

Basic nitrate of lime.	1000	Ferrous sulphate	20
Sugar	400	Albuminous substances soluble in	
Nitric acid	200	water	15
Potassium chloride.	250	Water.	2000
Magnesium sulphate	250		

Constituents of a Solution for Rye (in grams).

Lime	1000	Albuminous substances soluble in	
Sugar.	500	water	15
Nitric acid	100	Potassium silicofluoride.	5
Calcium phosphate.	250	Citric acid	5
Ammonium sulphate	250	Ferrous sulphate.	10
Potassium chloride.	250	Water.	2000

According to the invention also the processes of germination and growth can be aided by adding soluble decomposition products of albuminous substances of animal or vegetable origin to the inorganic nutrient salts, as illustrated in the foregoing examples. These products of decomposition are organic building elements for the cells of the plant. Albuminous decomposition substances artificially produced such as is the action of sulphuric or hydrochloric acid or of enzymes are also cell stimulants for artificially influencing growth. The albumen from which these decomposition products are procured may be obtained from meat, casein, lactalbumin or the like, or from oil-free plant seeds. For example, if lupine seed is to be cultivated, the albumen of the lupines is preferably decomposed in any suitable way, and the decomposition products are, dissolved in water, added to the inorganic salts. From the chemical point of view, the decomposition substances may range from peptone to amino acid. It has been found that certain medicinal chemicals, such as iodine as such i. e. in solution or in the form of its salts for example potassium iodide, may be added to the solution without the least trouble and will be absorbed readily by the germinating plant in the nutrient solution described. By way of example about 2 gms. of iodine may be incorporated with the quantities of materials of the first example. This is extremely important, as it will permit, by rapid artificial cultivation, to produce food plants for man or beast, which are of great value to the organism. The composition of the nutritive substance of the plant can be determined by a suitable composition of the nutrient solution. If vegetable fodder containing a very high percentage of phosphorus

is to be produced, a considerable portion of potassium phosphate must be added during the preparation of the nutrient salt solution having the composition mentioned. If the fodder is to contain iron, an iron salt should be one of the constituents. In the same manner any possible harmful influence on the organism of man and animal can be prevented.

A nutrient substance according to the invention is used in the following way:

The seed is placed in flat layers without earth into suitable containers, such as watertight boxes having a regulatable discharge outlet. To facilitate attendance and save space, the boxes may be combined into cabinets by being placed side by side or on top of one another. For the daily watering of about 200 kg. of seed thus arranged 50 to 80 grams of the nutritive substance prepared are added to approximately 400-500 liters of water. The treatment should preferably be carried out while light and air are excluded. On the first day, watering with the solution stated should continue for about 10 hours. During the next few days irrigation should take place three times a day for about half an hour each. The boxes are preferably closed to prevent as much as possible the entrance of light and air. It will then be found that development of heat is an attendant phenomenon of growth, which, owing to its favourable effect, should not be interfered with by airing, as might happen during watering. The level of the solution within the boxes is chosen so that on the first day the seed layer is fully covered by the solution, but during the following days when the roots have grown downwards the solutions need reach only up to the lower ends of the roots of the topmost seeds. In the course of time the strength of the solution may be varied by concentration or dilution according to the nature of the seed and the purpose for which the product is to be used. If the seed is exposed for about 3 to 10 seconds prior to watering to radiation by means of quartz lamps for instance, conditions for rapid germination will be improved. To further the growth carbonaceous or nitrogenous gas may be introduced into the boxes.

Owing to the watering and other treatment described, effective germination of the seed and growth of the plant will take place in a surprisingly quick way. Out of a seed layer 4 to 7 centimeters high will come after about 8 days a layer having approximately a height of 40 centimeters, which consists of a firm mass of roots, blades or leaves grown together, so that it can be removed as a solid block from its container after the period of growth is over. It is a remarkable fact that the grain of the seed is retained and quite firm after the treatment. Therefore, the vegetable layer can be used in this condition, without requiring cleaning and without waste, as fodder for animals, according to the seed employed for the germination and growth process. Experiments made with maize, cotton seed, lupines, common purple trefoil, soya beans and other seeds were very successful. The leafy portion can be removed from the seed and root portions and used in a suitable manner as raw diet for human beings. The invention is of very great importance for producing feeding stuff. Regardless of the time of the year, fresh green fodder will be available whenever desired, so that it becomes possible to dispense entirely with hay as fodder which readily gets mouldy when stored and thus may cause disease. Furthermore, the feeding stuff may be selected with a view to feeding animals for the production of either meat or milk. The importance of the invention resides in the rapid cultivation of plants, particularly for obtaining green fodder at a season when Nature does not offer it. By applying the invention fresh food and fodder can be produced within about 5 to 8 days without tilling the soil and without being dependent on more or less favourable weather conditions. Hospitals or dietetic establishments in particular will be capable of producing on their own premises for dietetic treatment fresh vegetable foodstuffs containing certain nu-

tritive or curative substances, such as iodine, and will be able to control the process completely.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

(1) A method of manufacturing a nutrient solution for accelerating the germination and/or growth of seeds or plants characterised by incorporating one or more nitrogenous inorganic substances including a nitrogen containing acid with one or more carbon containing organic substances, in aqueous solution.

(2) A method as claimed in claim 1 in which the nitrogen containing acid is nitric or nitrous acid.

(3) A method as claimed in either of the preceding claims in which sugar is the organic substance or one of the organic substances employed.

(4) A method as claimed in any of the preceding claims in which unslaked lime in finely powdered condition is intimately mixed with sugar, water is added so as to slake the lime and by the heat generated to convert the sugar to caramel so that a gelatinous or pasty mass results which is dissolved to a liquid state by addition of nitric acid.

(5) A method as claimed in any of the preceding claims in which soluble artificially produced degradation products of albuminous bodies of animal or vegetable origin are added to the inorganic nutrient substances.

(6) A method as claimed in claim 5 in which the degradation products are derived from albuminous bodies occurring in plants of the same kind as those for which the nutrient solution is intended.

(7) A method as claimed in any of the preceding claims in which the raw constituents employed comprise major quantities of unslaked lime, sugar, nitric acid, urea and potassium phosphates.

(8) A method as claimed in any of the preceding claims in which iodine as such or in the form of iodide salts is incorporated in the solution.

(9) A method as claimed in any of the preceding claims in which the contents of the solution such for example as the contents of iron, iodine, phosphorus are determined according to the plants to be treated and the purposes for which the latter are intended.

(10) A method of manufacturing a nutrient solution for accelerating the germination and/or growth of seeds or plants substantially as described.

(11) A solution for accelerating the germination and/or growth of seeds or plants when prepared by a method as claimed in any of the preceding claims.

(12) A method of treating seeds to accelerate the germination and/or growth thereof characterised by placing the seeds in a thin layer in a container having means for passing liquid therethrough, covering the seeds completely with the solution claimed in claim 11 and subsequently irrigating the seeds with reduced quantities of solution so that only the roots of the topmost seeds are covered.

(13) A method as claimed in claim 12 in which the first irrigation is continued for about 10 hours on the first day of treatment and the subsequent irrigations take place for periods of about $\frac{1}{2}$ hour three times a day on the following days.

(14) A method as claimed in either of claims 12 or 13 in which before irrigation the seeds are subjected for a short time to irradiation for example by means of a quartz lamp.

(15) A method as claimed in any of claims 12 to 14 in which air and light are excluded during irrigation.

(16) A method of treating seeds to accelerate germination and/or growth thereof substantially as described.

(17) Seeds or plants for animal or human food when treated by a method as claimed in any of claims 12 to 16.

Dated this 2nd day of November, 1931. For the Applicant, FRANK B. DEHN & Co., *Chartered Patent Agents*, Kingsway House, 103, Kingsway, London, W. C. 2

THE PRESENT STATE OF MILK RECORDING THROUGHOUT THE WORLD

*The present article is taken from the Monograph entitled "Le contrôle des vaches laitières dans le monde", of which the French edition is now in the press.
An English edition is in course of preparation.*

I. — THE DEVELOPMENT OF MILK RECORDING.

Long before there was a question of organised and systematic milk recording, the yields of cows or herds were determined either by private proprietors, research institutions or schools, or private organisations without it being considered necessary to make the records of use for persons not directly connected with the farm where the records were made.

These milking records were undertaken, towards the middle of the XIX century, and even more towards the end, by numerous farms, institutes and even stock-breeding societies in Europe and America with a view to selecting in each farm the animals most suitable for breeding. Mention may also be made of the milking tests made more or less regularly by some stock-breeding associations such as the "Holstein-Friesian Breeders Association of America" since 1883 and the "Friesian Herd-Book Society" in Holland since 1893, etc. At that time, however, there was no question of it being a true organisation for systematic milk recording.

In this article, in speaking of milk recording or dairy cow testing we mean records which are not only of value for the breeder himself with regard to selection for breeding, but also of interest for third parties, as, for example, buyers of breeding animals. The commencement of such a systematic recording of milk production took place in 1895 in Denmark when, at Vejen, for the first time several breeders formed a society with a view to systematic testing of their cows. This first milking test was made just at the time when dairy production in Denmark developed surprisingly owing to which that country became in a short time the greatest supplier of butter for the world market. It is therefore not astonishing that the milk recording movement developed so rapidly in Denmark as soon as its importance was realised for scientific breeding of dairy cows. Already, 3 years after the foundation of the first milk recording society, there were no less than 109 such societies in Denmark and more than 45 000 cows were recorded per annum.

The extension of the milk recording movement was, however, not confined to Denmark. In Germany, in 1897, the first society for milk recording was

founded though, it is true, in a part of the country which was handed over to Denmark after the war. In 1898 the other Scandinavian countries also joined in the movement: Sweden, Norway and Finland; and soon after also Hungary, and Holland so that at the end of the XIX century milk recording was already organised in 7 States.

The milk recording movement, however, at the beginning did not develop so rapidly in all countries as in Denmark. In many countries considerable difficulties were encountered chiefly due to the somewhat conservative temperament of the breeders. The greatest advance, from a territorial view point, was made in the first ten years of this century. Austria, Iceland, Czechoslovakia, Scotland, Latvia, Poland, France, Estonia, Ireland all adopted milk recording within a short space of time, also over-seas States such as Canada, the United States of America and Australia.

Milk recording had commenced in Great Britain just before the war, Owing to the war it decreased considerably, in many countries the existing organisations ceased to exist, in others the activity was only interrupted, while, in the neutral countries, and the over-seas States, there was a marked diminution in the activity and number of the organisations.

All the same, a proof of the utility of testing dairy cows and the great vitality of the organisations established, is that in all countries where milk recording was suspended during the war, it was immediately taken up again after the war was over and developed rapidly.

The economic crisis has also had an effect on the milk recording movement. The fall in prices of milk and dairy products on the one hand, and the somewhat high costs of milk recording on the other, brought about, in the majority of countries, either a decrease in the activity of the movement or at least a check in its advance which up to a short time ago was on the upward grade.

The tendency in many places to limit production and to restrain all measures for increasing production has also influenced the movement, though it must be remarked that ultimately milk recording is directed far less towards increasing production than towards rationalisation and reduction in costs. All the same, in comparison with other activities during the crisis, milk recording has shown a remarkable resistance and the set back it has received is by no means serious and will pass as soon as the economic situation improves.

At present milk recording is practiced in 34 countries by more than 14 000 organisations, that is, there are about 14 000 Recorders regularly occupied in testing Dairy cows. About 285 000 farmers and stock-breeders have their cows tested and about 4 ½ million cows are regularly under supervision. (See, Table I).

This shows great progress in comparison with the situation ten years ago when the previous enquiry was made into this subject (1). At that time, in about 20 countries where milk recording was practiced, hardly 1,8 million cows tested.

(1) See the monograph entitled "Dairy Cow Testing in different Countries" published by the International Institute of Agriculture in 1925.

TABLE I. — *Development of milk recording in various countries.*

Country and milk recording organisations	Foundation years of first milk recording organisations	Years to which figures refer	Number of milk recording organisations (or Recorders)	Number of farms practicing milk recording	Number of cows tested	Percentage of cows tested in total number of dairy cows
Germany	1897	1934	3 001	75 665	(1) 135 870	11.2
Austria	1900 about	1933	881	(1) 9 000	47 449	3.5
Belgium	1919-20	1933	—	—	26 339	2.9
Denmark	1895	1933-34	1 588	49 993	701 087	39.6
Danzig	(1920)	1933-34	40	802	14 748	36.8
Spain	1933	—	—	—	—	—
Estonia	1909	1934	225	5 004	37 816	9.4
Irish Free State	1910	1934	205	4 186	49 052	4.0
Finland	1898	1931	927	20 456	239 069	18.4
France	1905	1934	63	(1) 1 650	(1) 20 000	(1) 0.5
Great Britain:						
England and Wales	1914	1932-33	49	4 598	135 902	4.7
Scotland	1903	1933	39	741	32 456	13.0
North Ireland	(1921)	1934	73	2 544	15 050	6.0
Hungary	1897	1932-33	53	508	20 111	2.2
Ireland	1903	1933	89	2 128	5 418	26.0
Italy	1922	1934	(1) 260	...	(1) 35 000	(1) 1.5
Latvia	1904	1934	846	14 033	118 799	14.7
Lithuania	1923	1933-34	127	2 634	33 201	4.0
Luxembourg	1933	1934	72	—	—	—
Norway	1898	1933	524	9 104	97 767	12.0
Netherlands: official	1899	1932	781	15 185	159 157	12.2
Poland	1904	1933-34	259	5 237	68 658	1.1
Rumania	1930	1934	12	1 213	1 966	0.1
Sweden	1898	1932-33	931	17 803	300 855	14.7
Switzerland	1922	1932-33	628	(1) 5 000	8 136	0.9
Czechoslovakia	1903	1934	144	4 768	33 867	1.3
<i>Total for Europe (1) (2) . . .</i>	—	—	12 000	250 000	3 500 000	—
Argentina	1911	1934	4	20	2 361	0.1
Canada:						
Record of Performance	1911	1934	—	—	14 883	1.7
Testing Associations	—	1933	332	4 351	43 688	
United States:						
Breed Associations	1883	1934	—	—	9 600	1.3
Cow Testing Associations	1906	1934	793	13 694	325 837	
<i>Total for America (2) . . .</i>	—	—	1 150	20 000	400 000	—
Southern Rhodesia:						
official and semi-official	1929-1932	1933	2	42	1 600	—
Union of South Africa:						
official	1917	1934	32	187	1 569	—
semi-official	1923	1934		387	9 074	—
<i>Total for Africa (2) . . .</i>	—	—	34	600	13 000	—

Country and milk recording organisations	Foundation years of first milk recording organisations	Years to which figures refer	Number of milk recording organisations (or Recorders)	Number of farms practicing milk recording	Number of cows tested	Percentage of cows tested in total number of dairy cows
Australia:						
New South Wales:						
Pure Bred Scheme . . .	1912	1932-33	—	—	5 214	6.8
Grade Herd Testing . .	1912	1932-33	...	(1) 2 500	63 882	
Victoria:						
Pure Bred Scheme . . .	1912	1932-33	—	—	2 862	13.4
Grade Herd Testing . .	1921-22	1932-33	142	3 383	106 871	
Queensland:						
Pure Bred Scheme . . .	...	1933	—	—	700	—
Grade Herd Testing . .	1910	1933	...	(1) 1 000	(1) 12 000	—
South Australia:						
Pure Bred Scheme . . .	1912	1933	—	—	650	—
Grade Herd Testing . .	1920	1933	...	(1) 100	(1) 2 500	—
West Australia:						
Pure Bred Scheme . . .	1918	...	—	...	...	—
Grade Herd Testing . .	1932	1933	...	...	(1) 4 000	—
Tasmania:						
Pure Bred Scheme . . .	1914	1932-33	—	—	263	7.2
Grade Herd Testing . .	1915	1932-33	...	28	5 623	
New Zealand:						
C. O. R. Testing . . .	1912	1932	—	—	(1) 400	16.6
G. O. H. T. Testing . .	1927	1932-33	—	—	1 525	
Association Testing . .	1909	1932-33	78	1 242	23 163	
Group Testing	1923	1932-33	200	5 090	253 016	
Total for Oceania (2) . . .	—	—	500	14 000	500 000	—
GRAND TOTAL (2) . . .	—	—	14 000	285 000	4 500 000	—

(1) Approximate values.

(2) Evaluation taking into consideration the countries where figures are lacking.

While, during the first years of milk recording, in most countries, it was chiefly the large farms which participated, now the number of small farms are increasing constantly, energetically encouraged by the Governments. A proof of this is that in Sweden, in the last 5 years, the average number of cows tested per farm has fallen from 18.94 to 16.84.

Denmark, the country of origin, is still the centre of milk recording. About 40 % of the cows there are tested though in some other countries almost the same figure is arrived at. In all the north and a greater part of central Europe a large percentage of the cows are now tested and, during the last few years, progress has been made in the countries of southern Europe where milk recording, owing to the small importance of stock breeding, was not able to develop up to the present time to the same extent as in essentially milk producing countries.

Among the producing countries over-seas, it is in the United States, Canada, South Africa, Australia and above all in New Zealand that milk recording plays such an important part. In other countries such as Argentina, Japan, etc, it has begun to be undertaken seriously.

II. — ORGANISATION OF MILK RECORDING.

An international survey of the organisation of milk recording is, like all international comparisons of the movement, made extremely difficult by the great differences which exist between the various countries. The organisation differs, not only from country to country, but also within the countries where there are various forms of organisations working side by side.

FORMS OF ORGANISATION.

These forms may be divided into 3 main groups:

(1) Organisations established for milk recording, but also carrying out other activities.

(2) Independent organisations carrying out milk recording; the principal and original aim, however, not being milk recording.

(3) Milk recording performed by the State or by official institutions.

Beside these 3 principal groups there are numerous other intermediate forms consisting of a collaboration between different organisations and between these organisations and the official institutions.

Organisations founded for milk recording. — The type generally found is the association established only for milk recording. The majority of countries have followed the example of Denmark in this respect and have usually founded small societies which practice milk recording on the farms of their members.

It is almost impossible to speak of independent co-operative societies as, almost everywhere, either the State or certain organisations exercise a degree of control which has to be submitted to.

The milk recording societies do not always limit their activities to milk recording as they often supply farmers and breeders with technical advice and keep account books and undertake pig recording for their members (Denmark, Sweden, Norway) and other yield records.

In the majority of cases each milk recording organisation only employs one Recorder and their membership is dependent on the number of visits made, the territorial extent of their activity, the size of the herds and the distance between farms. Usually the membership of an association includes 22 to 26 farms. Sometimes, it is true, a milk recording organisation employs more than one Recorder in which case the membership is larger and the territorial area is greater. This is chiefly the case when, as for example in England and Hungary, the region embraced in the activity of a milk recording organisation is linked with a certain administrative area.

Milk recording by other independent organisations. — In some countries milk recording is carried out by organisations not originally established for that purpose, but performing it as one of their tasks. These are generally *co-operative stock-breeding societies*, *stock-breeders societies* and *stock-breeding syndicates*, as, for example, in Austria, Belgium, Luxemburg, France, Italy, Rumania, Switzerland and Japan. The aim of these organisations is the improvement of live stock in general and milk recording, as well as the keeping of Herd Books and other initiatives, is considered to be a means towards that end.

The *agricultural organisations* such as the farming unions "*Syndicats d'exploitation*" in Belgium aim at raising the level of all farming and organise and carry out milk recording for that purpose. To this group also belong the countries where milk recording is practiced by Chambers of Agriculture and Agricultural Councils as in a part of Poland and Czechoslovakia.

In many cases milk recording is carried out by dairies, which are often co-operative societies, as the interests of the dairy correspond with those of the stock-breeder, namely, the attainment of a higher yield in milk and above all a larger quantity of butter fat. In addition, the dairy frequently possesses a part of the necessary means for carrying out milk recording. In the Irish Free State, Holland, France and New Zealand, milk recording is often performed by dairies.

It results from the nature of these organisations which differ so greatly in importance and also in the extent of their activities, that an international comparison appears to be nearly impossible.

Milk recording by official institutions. — In some countries the State practices milk recording with the aid of different institutions as follows:— (1) milk recording dependent directly from the Ministry of Agriculture as in Argentina, Southern Rhodesia, the Union of South Africa, the majority of States in Australia and New Zealand — (2) milk recording performed by the official agricultural institutions of the provinces such as the "*Cattedre Ambulanti di Agricoltura*" in Italy — (3) milk recording by research institutions of the State as, for example in Czechoslovakia and Rumania, or by Agricultural Colleges as is generally the case in the United States.

Central organisations for milk recording. — In order to facilitate and increase milk recording, in the majority of countries where it is in hands of independent organisations these unite in larger groups.

These central organisations are generally composed of representatives of local organisations and representatives of the State or other institutions connected with milk recording.

This unification takes place generally according to territorial units (provincial societies, etc.) sometimes according to breeds of cattle (Austria, France, Switzerland) or on some other basis (for example, in Lithuania there are 3 societies independent from each other, without any relation to territorial units or breeds). In the majority of countries these higher organisations are reunited in a national organisation, whose activity extends over the whole State except when local organisations are directly linked to one of these national organisations.

These central organisations may be associations expressly established for the organisation of milk recording or the milk recording organisations unite with *organisations already in existence* which have not been founded exclusively for milk recording such as breed associations for certain breeds of cattle, other stock-breeding associations, general agricultural associations, dairying associations, etc.

The object of these central organisations is to supervise and encourage the activity of milk recording organisations on a uniform basis. This is frequently done by issuing rules which the member societies are obliged to observe and by distributing instruments, apparatus, and the necessary books and schedules. Generally these central organisations assemble the results of milk recording communicated to them by member societies and provide for their publication.

The State often makes use of these central organisations to distribute subsidies and to supervise various local organisations. In many cases the central organisation employs the Recorders or the appointment of these persons is dependent on its approval. An inspector of the central organisation generally exercises a control over the activities of these Recorders. These organisations usually issue certificates and information on the results of milk recording.

In certain regions, such as many parts of Germany, Sweden and Switzerland, the central organisation carries out almost all the work of the local organisations; the Recorders are directly dependent on the central organisation which has decided advantages as the work of the Recorders can be rationally organised and the inequalities which arise in the distribution of their work can be more easily removed in large territorial areas than within the small local organisations. In this case instead of milk recording societies there are milk *recording circles* an expression which designates the area under the supervision of one Recorder.

In many cases, when not undertaken by the State, the central organisations accord their approval to various local organisations, either official or semi-official, provided they satisfy certain conditions and conform to certain established rules. The documents of recognised organisations thereby acquire an official character, above all if, as is generally the case, the central organisation is charged by the State with according approval, so that the documents gain in value.

INFLUENCE OF THE STATE ON THE MILK RECORDING MOVEMENT.

As has been already said, in many countries the State itself organises the milk recording movement and in all countries its influence on milk recording is more or less important.

Almost everywhere where the State does not itself carry out milk recording, it subsidises the movement with grants, more or less large, which nearly always represent a high percentage (often 50 % and more) of the total expenditure on milk recording. In return, the milk recording organisations are expected to strictly observe certain *rules and regulations* established either directly by the authorities or by a central organisation approved by the State.

In addition, the State exercises a very strict supervision over the work of milk recording through its own organs or those of the central organisation.

In several countries, the State authorities *institute milk recording organisations*, which, however, work as independent organisations, *nominate the staff*, for these organisations, *distribute apparatus, instruments, and the necessary books and schedules*, and very often *collect, assemble, publish and certify* the results of milk recording. In addition the State generally accords *official approval* to societies or organisations which submit to its rules, their documents thereby acquiring an official or semi-official character.

RECORDING STAFF.

In the majority of countries preliminary instruction is demanded of Recorders.

Sometimes it is sufficient to have attended an agricultural school and to have acquired the necessary practice in milk recording. In most countries there are special courses and schools for Recorders or stock-breeding schools, as in Lithuania, and in all countries a certificate of a course or school of this kind is necessary for undertaking the work of a Recorder.

In some countries, Recorders are obliged to pass an *examination* before being allowed to practice. In Scotland, the Irish Free State, France and other countries, the appointment of a Recorder is subject to the approval of the State. In Holland the Recorder should possess a diploma given by the Dairy Association or State consultant.

In Finland milk recording is carried out exclusively by women.

In addition to Recorders the milk recording movement also has superior officers who supervise and direct the work of the Recorders. Generally these are functionaries of the central organisation and naturally a more complete training is required of them than of the Recorders, proper.

In some countries all Recorders and in others only the higher officers are functionaries of the State and are either occupied solely in milk recording or in other activities as well.

In countries where milk recording is entirely in the hands of the State, it is generally dependent from a higher functionary of the Ministry of Agriculture.

In Holland the Recorders are aided in their work by Assistant Recorders who carry out the weighing of the milk and work entirely under the Recorder.

VARIOUS FORMS OF MILK RECORDING.

In some countries there are several types of organisations for milk recording working side by side and which are differentiated by the methods they use. In Holland and Scotland, there are official and non-official milk recording associations according as to whether the milk recording is or is not carried out in conformity with the rules established by the central organisations. The non-official milk recording is usually performed by the breeders themselves, without Recorders, and for that reason is not certified by the central organisation.

In Belgium, milk recording done by the stock-breeding syndicates is distinguished from that of the farming unions ("Syndicats d'exploitation") in an analogous way.

In Argentina, official milk recording is carried out solely by the State and non-official milk recording is that which is performed by the "Sociedad Rural Argentina".

In Sweden, there is a difference made between a very exact recording (A) and a less exact (B), the results of the first only have an official character.

In Canada, the United States, Southern Rhodesia, the Union of South Africa, Australia and New Zealand, a rigid distinction is established between Herd-book cows and grade animals. Frequently the first is called "official" and the second "non official" or "semi-official", though in both cases the State performs or supervises the milk recording. Generally the two forms of milk recording differ in their organisation, but in almost all cases different methods are used.

III. — MILK RECORDING METHODS.

Methods of milk recording differ not only between countries, but often within the countries themselves and hardly any progress has been made in unifying these methods since the last enquiry was made (about 10 years ago), but the researches into the theory of methods of recording have given results which will permit the unification of these methods and render them more exact (*).

In the first place the methods differ in the *persons who carry out milk recording*. This may be done by the owner or by an employ  e of the milk recording organisation. In addition, a system is often applied by which milk recording is done by the owner and also by a person not connected with the farm.

Milk recording executed solely by the owner is naturally of very little importance for persons outside the farm and only serves to give the stock-breeder indications for breeding.

This type of milk recording, practiced for example in Scotland and Holland under the non-official system, is limited to determining the quantity of milk produced and there is no question of an organised activity except in so far as the owner receives the necessary utensils and schedules from a society or from the State and in return he sends his records to the society for computation.

In Sweden, Queensland (Australia) and New Zealand there are, besides other systems, a system of recording in which the *owner determines the quantity of milk produced* and sends a *sample of milk* to be tested for the butter fat content to a centre indicated by the milk recording organisation (in this case the State).

This system is naturally of value only to the breeder as the results cannot be certified.

Most frequently testing is done by a *Recorder employed by the milk recording organisation*; this type of milk recording takes place in almost all countries where milk recording is practiced. Testing by a Recorder is more or less regular (except by the farming unions in Belgium which is irregular), that is, it is done

(*) See this *Bulletin* 1934, No. 1, pp. 3-12, "Reliability of Different Methods of Milk Recording".

at stated intervals, but without fixed dates so that the owner does not know in advance on which day the tests will be made.

Many associations recording regularly also make *surprise visits*. This is the case with: the official milk recording association in Scotland, the "Herd Improvement Associations" (associations for improving stock) in the United States, the State milk recording association of Victoria (Australia) and the C. O. R. ("Certificate of Record") in New Zealand. The object of surprise visits is to prevent the owner disguising the actual milk yield obtained under ordinary conditions.

Frequently, in addition to testing by a Recorder, *regular tests made by the owner* are also required. In this case the Recorder only verifies the owners records. The owner's tests are considered to be the principal ones and those made by the Recorder, though very important, are only secondary. This system is in force in the following countries: England, Austria, Canada, Esthonia, the United States (by the stock breeding associations), Iceland, New Zealand (by the C. O. R.), Southern Rhodesia, Sweden (type B), Switzerland and the Union of South Africa. In Denmark testing by the owner is not compulsory and is only optional and supplementary to the work of the Recorder. In almost all cases where milk recording is carried out by the owner and the Recorder the former only weighs the milk while the Recorder examines it, tests for butter fat content, and, if necessary, makes other observations.

The *frequency of testing* by the owner and the Recorder differs greatly. In countries where testing is done by the *owner* these records vary between daily (in Belgium by the farm unions), England, Canada, the United States (in part, South Africa, New Zealand (by the C. O. R.), and records made every two months.

Frequency of the Recorder's visits also varies between every fortnight and three times per annum (with the exception of the short tests made in the United States and Japan which will be mentioned again later). In some countries irregular tests are made, as by the farm unions in Belgium and in the "Records of Performance" in Canada. At the present time, testing every month or 28 days is the most usual in the following countries: Germany, Austria, Belgium (Stock Breeding Syndicate), Denmark, Danzig, Scotland, Esthonia, Finland, France, Italy, Latvia, Lithuania, Norway, Holland (with the exception of Friesland), Czechoslovakia, the United States (in part), Southern Rhodesia (official milk recording), South Africa (official milk recording), Australia (with the exception of Queensland), New Zealand. At present it is only in very few countries such as Luxemburg and Friesland (Holland), that an interval of 15 days is required between the visits of the Recorder; in Poland, Rumania, Sweden (type A) milk recording takes place every three weeks. Longer intervals are adopted in the following countries: Iceland 3 times a year; the Irish Free State, North Ireland, England (at least 8 times per annum); Canada ("Production Certificate") every 6 weeks; Switzerland, Canada ("Testing Associations"), the United States (in part), Southern Rhodesia (semi-official) and South Africa (semi-official) every 2 months; the Tyrol (Austria) 70 day intervals.

The above mentioned intervals are the maxima required by those countries and it does not follow that in several countries shorter intervals are not observed. In fact, the differences between intervals of milk recording within the countries are considerable.

During the last few years the intervals between the Recorder's visits has shown a tendency to increase. The crisis has made this increase necessary for *economic motives* in many countries, on the other hand, by reducing costs, attempts have been made to encourage a greater number of breeders to join the milk recording movement. This has been facilitated by the fact that it has been possible to prove that by testing at intervals of not more than 30 days possible errors are of no great importance.

In Rumania milk yield recording takes place every 14 or 21 days; in the first case testing for butter fat content is only done by the Recorder every 30 days, that is, every other visit.

In the United States and Japan, short tests are made to a certain extent, that is, for a short period, 7 to 14 days, tests are made daily and the results apply only to this period. In Japan, there is also a 30 day testing period during which the Recorder determines the quantity of milk and the butter fat content every 10 days.

The Recorders' visits usually last 24 hours and covers the whole day's milking. Visits of 48 hours now only take place in Canada ("Record of Performance"), the United States ("Breed Associations"), Japan, Southern Rhodesia ("official"), South Africa ("official") and Victoria (Australia). In Australia and New Zealand (C. O. R. and G. O. H. T. = "Government Official Herd Test"), in addition to the 24 hour test, supervision of the last milking previous to recording is required, that is, it must be ascertained whether the cow has been milked dry or not.

In Belgium, 4 milkings are tested, but the result of the 3 smallest only are registered.

The duration of *total recording* varies between 200 days and one year with the exception of the above mentioned short test. Often the duration of testing is limited to the lactation period (in Spain, Irish Free State, France (partly), Lithuania, Holland, and Argentina) though at the same time fixing a maximum period (in the Irish Free State 315 days). Most frequently the recording period lasts a whole year though in Australia it is generally limited to 273 days, in Italy to 280 days; in Belgium, France (in part), Switzerland, South Africa, to 300 days; in the Irish Free State to 315 days; and in Canada, the United States and New Zealand (C. O. R.) to 305 days. Often there exist side by side, systems of milk recording with different lengths of testing or else the period may be extended if desired by the owner or when it is a question of extraordinarily good cows, as in Southern Rhodesia, South Africa and New Zealand (C. O. R.). The result obtained naturally varies according to the length of the recording period even when the yield is limited by the lactation period and even if the length of the recording period is longer the lactation. There can be no question of making an international comparison of the records in view of the great differences in the length of recording.

TABLE II. — *Frequency and duration of milk recording (approximate values).*

Countries and milk recording organisations	Duration of total test (days)	Intervals (in days) between 2 successive test				Duration of each tests (hours)
		Testing by breeder		Testing by Recorder		
		compul- sory	actual	compulsory	actual	
Germany	365	—	—	28	14 à 28	24
Austria	365	14	—	28	—	24
Tyrol	365	14	—	70	—	24
Belgium:						
Stock breeding syndicates . .	300	—	—	30	—	(1) 24
Farm syndicates	—	1	—	irregular	—	24
Denmark	365	—	—	30	10 à 30	24
Danzig	365	—	—	28	—	24
Spain	L	—	—	30	—	24
Esthonia	365	10	—	30	—	24
Irish Free State	L (315)	7	—	45	—	24
Finland	—	10	—	30	—	24
France	(1) 300	—	—	30	21 à 90	24
Great Britain:						
England and Wales	365	(1) 7	1	45	45 à 56	24
Scotland	365	—	—	28	(3)	24
North Ireland	365	7	—	45	—	24
Hungary	365	—	—	30	15 à 30	24
Iceland	365	7	—	121	—	24
Italy	280	—	—	30	15 à 30	24
Latvia	365	—	—	30	15 à 30	24
Lithuania	365	—	—	30	14 à 30	24
Luxembourg	365	—	—	15	—	24
Norway	365	—	—	30	21 à 30	24
Netherlands (official)	L (330)	—	—	28	14 à 28	24
Friesland (official)	L (330)	—	—	14	—	24
Poland	365	—	—	21; 30	14 à 30	24
Romania	365	—	—	(5) 21	14 à 21	24
Sweden (type A)	365	—	—	21	14 à 21	24
Switzerland	300 (365)	14	—	60	—	24
Czechoslovakia	365	—	—	30	—	24
Argentina (official)	L	—	—	30	—	24
Canada:						
Record of Performance . . .	365 (305)	1	—	irregular	—	48
Testing Associations	365	1	—	60	—	24
Production Certificate	365	1	—	45	—	24
United States:						
Breed Associations (2)	365 (305)	1	—	30; 60	—	24; 48
Herd improvement	365	—	—	30; 60	(3)	24
Japan (2)	365 (305)	—	—	30	—	48
Southern Rhodesia:						
Official	300 (365)	3	1	30	(3)	48
Semi-official	300	7	1	60	(3)	24
Union of South Africa:						
Official	300 (365)	3	—	30	(3)	48
Semi-Official	300	7	1	60	(3)	24
Australia:						
All States (Official)	273 (365)	—	—	30	—	(4) 24
New South Wales (Assoc.) . . .	365	—	—	30	—	24
Vistoria Official)	273 (365)	—	—	30	—	48
Victoria (" Associations ") . . .	273	—	—	30	—	(3) 24

Countries and milk recording organisations	Duration of total test (days)	Intervals (in days) between 2 successive tests				Duration of each test (hours)
		Testing by breeder		Testing by Recorder		
		compul- sory	actual	compulsory	actual	
Queensland	—	60	—	—	—	48
South Australia	—	—	—	30	—	24
West Australia	273	—	—	30	—	24
Tasmania	273	—	—	30	—	24
New Zealand:						
Certificate of Record	365 (305)	1	—	30	—	(3) 24
Gov. Official Herd Testing . .	365	—	—	30	—	(3) 24
Association Testing	—	30	—	—	—	48
Group Testing	365	—	—	30	—	24

The column "*compulsory*" indicates the interval in days prescribed as the maximum or most frequently adopted.

The column "*actual*" indicates the interval in days usually adopted besides the compulsory interval.

The figures in parenthesis in the 1st column (duration of total test) signify that, besides the usual periods, other periods are also adopted according to the wishes of the owner or for other reasons.

(L) signifies that the duration of total recording corresponds with the duration of the lactation period.

(1) In Belgium 4 milkings are recorded, but only the results of the three smallest are dated.

(2) As well as the periods of recording mentioned, systems of short records are employed.

(3) As well as the regular visits, there are also surprise visits.

(4) Before the beginning of recording, proper, an examination is made to ascertain if the cow has been milked dry at the last milking.

(5) Testing for butter fat is only done every month; in the case of milk recording every fortnight the test is made every 3 weeks.

With a milk recording period of 365 days the annual test may be reckoned as from the time of calving or dated from a given day of the calendar year. In the second case there are generally two lactations in the same recording year in which case the duration of the dry period has a great influence on the amount of total yield recorded.

In many countries there is a fixed term for the *commencement of milk recording, proper*. Thus in the United States and the Irish Free State milk recording by stock-breeders societies begins on the 4th day after calving; in Rhodesia, South Africa and Australia on the 5th day; in Switzerland recording should not commence before the 6th day or after the 21st day; in Spain France and Italy it begins on the 8th day and in the Irish Free State it should commence not later than the 14th day after calving.

In most cases milk recording begins on the day of calving though the butter fat content is not ascertained during the first few days. Thus in Canada and the United States butter fat tests are not made before the 6th day, in Rhodesia and South Africa not before the 8th day, in Ireland not before the 14th day.

In addition, it is established that no sample of milk should be taken for this test if towards the end of lactation the cow has given less than 10 lbs of milk per day. In Holland recording ceases when a cow gives less than 2 kg. (7.4 lbs) of milk at the end of the period of lactation.

In many tests for milk yield there are special *requirements* demanded of the owner or the animals recorded, which can have a decided effect on each single result or on the final result. Thus *entire herds* are often tested so that not only the best cows are chosen for recording; in many cases only the cows entered in the *Herd book* (pure bred) are tested; in other cases only *cross-bred* cows; sometimes it is required that all the pure-bred cows on a farm should be tested as is the case in the "Record of Performance" in Canada. Also, in that country (though with the "Production Certificate" system), as well as in Southern Rhodesia and South Africa, only the cows indicated by the owner are tested.

While in Belgium the stock-breeding syndicates carry out milk recording during *one single period of lactation* in the life of a cow, in Rhodesia and South Africa cows should be tested *during the whole of their lives* if they are on a farm where milk recording is practiced. Generally, however, breeders can have their cows tested for as long as they wish.

Seeing that the milk yield greatly depends on the *interval between two successive calvings* and that cows which remain not carrying for some time after calving would be unjustly favoured, a maximum period is often fixed between the calving subsequent to that which preceded testing. Thus in Canada, for the "Record of Performance," it is necessary that the cow tested should calf again not later than 400 days after the calving which preceded the beginning of milk recording. In New Zealand (C. O. R.) this interval is extended to 455 days for a cow 4 years old.

In the United States ("Breeder's Associations"), in Japan, in Southern Rhodesia and South Africa, the *number of daily milkings* is limited to 4; in Rhodesia, occasionally, 4 milkings are permitted for an exceptionally good milker. In the Irish Free State, 3 milkings are occasionally allowed though generally only 2 are permitted.

In the majority of countries, cows suckling their calves are not recorded.

Almost everywhere unexceptionable *markings* are required for tested cows, either numbers on the horns, ear-marks, brands, tattooing or sometimes only registration. Very often marking is done by the Recorder when registering cows to be tested, or, as in England, persons are expressly employed for tattooing.

Milk recording may include: determination of the quantity of milk produced – butter fat content – food consumption of the cows and occasionally, determination of solids-not-fat in the milk. All these operations are not carried out everywhere, sometimes one or other is omitted. The quantity of milk only is determined everywhere, generally also the butter fat content; rarely, the food consumption.

The *quantity of milk produced* is ascertained almost everywhere now-a-days by weighing, generally on special scales such as the BESSEMER. Pails are no longer used for measuring except in Austria, Belgium and Luxemburg.

The quantity of milk produced is ascertained in some countries only by the owner, in others only by the Recorder, in others by the owner and the Recorder

who verifies the records of the owner. Measuring instruments are frequently examined.

Testing for butter fat does not take place everywhere. Thus in England it is optional, though in the majority of countries the butter fat content is considered one of the most important factors in the yield.

Butter fat testing consists of taking samples and analysing them. In the "Cow Testing Associations" of Canada, in Queensland (Australia) and in the association system of New Zealand, the *sample is taken* by the owner of the cows and is sent to a laboratory or some other centre for analysis the result being communicated to the owner and entered in the registers of the milk recording organisation. In all other cases the sample is taken by the Recorders. The operation generally takes place thus: a sample is taken of each milking during the Recorder's visit, all the samples from one cow are then mixed together in such a way that the total sample is proportional to the quantity of milk from each milking.

Contrary to this procedure, in Denmark, England, in the "Cow Testing Associations" of Canada, the official tests of South Africa, Southern Rhodesia and Australia, in the C. O. R. tests of New Zealand and in South Australia, the samples from the different milkings are not mixed, but tests for butter fat are made separately for each milking.

Sometimes only a sample from a single milking is analysed, as in Spain and the semi-official tests in Southern Rhodesia.

As *testing for butter fat* is generally done by the Recorder during his visit to the farm, he brings with the necessary apparatus and chemical products for examining the milk on the spot, usually directly after the last milking.

Testing for butter fat is not done on the farms in the following countries: France, Spain, England, Luxemburg, Rumania (in part), Sweden, Switzerland, Canada ("Cow Testing Associations"), Victoria (Australia), Queensland, New Zealand ("Association and Dairy System") and also sometimes in Norway. The Recorder takes the samples with him or they are sent (when taken by the owner who sends them himself) to be analysed at a laboratory, research station or the nearest dairy.

Four different methods are used for butter fat testing; namely, the methods of GERBER, BABCOCK, HOYBERG and LINDSTRÖM.

In European countries the GERBER *method* is chiefly used, only in France and Rumania some syndicates use the HOYBERG *method* which is also used to some extent in Norway; in Finland, Norway and Sweden the LINDSTRÖM *method* is employed. At the present time, the GERBER method is also used in over-seas countries such as Argentina, South Africa, Southern Rhodesia, Victoria (Australia) (for pure-bred cows), New Zealand (partly by the "Association System" and "Group System") and also partly in Japan.

The BABCOCK *method* is used in the majority of over-seas countries, namely: the United States, Canada, Australia (with the exception of Victoria), New Zealand for the greater part (even entirely for the C. O. R. and G. O. H. T. tests) and to some extent in Japan. It may be said that the BABCOCK method is principally used by the anglo-saxon part of the world and the GERBER method in the rest.

In the *Union of South Africa* only, qualitative testing of milk is not limited to testing for butter fat. Since October 1932, determination of the solids not fat was introduced into the system of official milk recording by the Government, though on an optional basis, according to the wishes of the owners. This is done every 30 days.

Determination of food consumption only takes place in a part of the countries where milk recording has been introduced. In Austria, Scotland, France, Luxemburg, Rumania, Argentina and New Zealand up to the present no attempts have been made to ascertain food consumption either because it would take up too much of the Recorder's time or because it is considered that the methods of determining food consumption are at present too inexact to permit conclusions to be drawn as to the capacity of the animal to utilise the food which should be the most important matter to be determined.

In some countries it is limited to obtaining information of a general nature on the *quantity and composition of the forage ration*, these countries are: England, Wales, Italy, Poland, Switzerland, Southern Rhodesia and South Africa. The object is less to draw conclusions as to the capacity to utilise the food than to discover faults in feeding by owners and to give advice to breeders on feeding their stock.

In Germany, Belgium, France and Italy testing for food consumption is not compulsory, but is generally done if the owner wishes.

Compulsory testing for food consumption exists only in the following countries: Denmark, Danzig, Spain, Esthonia, Finland, Latvia, Lithuania, Iceland, Norway, Sweden and Czechoslovakia.

In some of these countries and those where testing for food consumption is optional, it is limited to arriving at a *quantitative judgement*. In Hungary, Iceland, the United States, Japan and Western Australia it is limited to weighing the various feed stuffs given and to indicating the absolute quantities. In the United States and Western Australia the costs of feeding are calculated. In the following countries not only quantitative, but also *qualitative* tests are made: Germany, Danzig, Denmark, Spain, Latvia, Esthonia, Norway, Finland, Sweden and Czechoslovakia. The principal methods applied are the KELLNER and the Scandinavian method of calculating forage units.

The *Oskar KELLNER method*, used in Germany, at Danzig, in Spain, partly in Latvia and Poland and, with the JUSTE correction, also in Czechoslovakia, is based on tests made by KELLNER with fattened cattle. KELLNER considered the effect of starch on the fattening of cattle as a measure of the effect of all other constituents of the feed, and he places these in a determined relation to starch by means of co-efficients of reduction. According to this method the *starch value* of various feeds is calculated and tests are made with cattle to be fattened. The starch value of feeds thus calculated indicate their value for fattening full grown cattle. The protein content is only estimated according to its value for producing fat and the value of this nutritive element for producing other effects in the body of the animal is ignored.

The *Scandinavian method of calculating forage units*, as today applied in Denmark, Italy, Lithuania, Norway, Sweden, Finland, Esthonia and to some

extent in Latvia where this method has been slightly modified by Prof. BUSCHMANN, is due to the collaboration of scientists in Scandanavian countries. It is based on feeding tests with cows and pigs. The first of these tests were undertaken by FJORD in Denmark, but the scientist to whom the greatest merit is due in working out this method is Nils HANSSEN in Sweden. The object of the tests that were made not only in Denmark and Sweden, but also in Norway and Finland, was to compare the effect of different feeds on the milk yield and to base them on a common denominator represented by a Scandanavian forage unit. This is 1.1 kg of ordinary barley and 1.1 kg of dry matter of fodder beet or other feeds having the same food value. One forage unit corresponds to 0.75 kg of milk produced.

The Scandanavian forage unit calculation corresponds perhaps better with the purposes of milk recording than the starch values of KELLNER as it is based on tests made with dairy cows and, according to HANSSEN, the effect of protein on milk production is about 70 % greater than on fattening, while the utilisation of non-nitrogenous nutritive elements in the feed for milk production only exceeds by 15 to 20 % their utilisation for fattening.

The *forage unit* of BUSCHMANN, used by the milk recording organisations in Latvia, corresponds to about 0.6 kg of the KELLNER starch value.

Pasture presents a considerable difficulty in estimating food consumption. This is the reason why in New Zealand, where the cows are almost always pastured, testing for food consumption is not practiced. In the United States only a simple estimate of the food value of the pasture is made.

Generally the value of pasture is estimated on the basis of milk yield, its butter fat content and the weight of the animal. This method is evidently very defective, chiefly because it is just the utilisation of feeds by cattle which should be determined. It must be realised that up to the present a certain method has not been found for determining this utilisation with regard to pasture.

IV. — REGISTRATION OF RECORDS.

Unfortunately data regarding methods of registering and books and forms used, are defective in most of the reports of the various countries. In certain of these reports, data are entirely lacking and it has not been possible to obtain this information, either from enquiries or literature.

In the reports which contain some sort of precise and synoptic data on registration and forms employed, it has been observed that there is a very great difference between the various countries, so much so that a survey appears to be nearly impossible. It may be said that the manner of registering records and keeping books and forms, also the type of books and forms vary from country to country so as to render impossible even a superficial classification of methods in certain categories or classes. Sometimes even the object of these books and registrations is not at all clear.

The *names* given to books and schedules in various countries also differ greatly which makes a comparison even more difficult.

It goes without saying that the books and registration must vary according to methods employed for recording as, for examples according to the organisation, of milk recording, the person who carries out the tests, the place and manner of recording and finally the object in view.

According to the methods employed, whether the owner or the Recorder or both carry out milk recording, the books also may be kept by one or the other or both at the same time. Another difference consists in the fact that the books and forms can remain on the farm or else be taken away by the Recorder. Often two copies are made of the first records taken, one of which remains at the farm while the other is sent to be registered at a milk recording society, central association or some other centre, or is taken away by the Recorder.

Most frequently the first observations are immediately entered at the farm in a byre book, milk recording note book, or byre register or, as is generally the case in British over-seas possessions, on a byre sheet. Usually, in these byre books or sheets a separate page is kept for each day of recording with a separate line for each cow tested. The notes are written from the top downwards for each cow, while, the observations are entered in vertical columns (quantity of milk, butter fat content, data on feeding, etc.) if these observations require no calculation.

Less often the observations on milk recording are immediately entered at the farm in books or on sheets in which a page is *reserved for each cow*.

If testing is done by both the owner and the Recorder entries may be made in the byre register by both in which case the notes made by the Recorder should be recognisable (for example, written in red ink) or the Recorder enters his notes in separate books or byre sheets (Scotland, Irish Free State) and any important differences between the owner's and the Recorder's results are noted separately.

The notes entered in the book or byre register are copied into another book which is called by different names in various countries (Main register, Milk recording register, Milk Record Book, Herd Record Book, Summary of Milk Records, Annual register, etc.) Transcription from one book to another is rarely done on the farm. If the results of milk recording are entered in the book or byre sheet by the owner, he generally sends a copy to the milk recording organisation where they are registered, or else the Recorder takes the notes made on the farm away with him and enters them up in his office.

The notes entered in the book or byre sheet are not always registered in the Main or milk recording register. More frequently the results of certain calculations based on the results of the tests are registered in these books, chiefly the yields in milk, butter fat for the recording period. (Number of days separating 2 visits by the Recorder).

In these books generally a special page is reserved for each cow at the top of which is written the breed, age, origin, owner, beginning and end of lactation, date of birth, etc.

If recording is done by stock breeding syndicates, as in Austria and Belgium, the records are copied directly from the byre book into the *Herd-book*, or else, if special milk recording books already exist, only the final results and annual figures are entered in the Herd-books.

As well as Extracts from the milk recording register which contains the results of each test (copied from the byre book or the results of each recording period) the results of the total period of lactation or annual record are frequently entered in *special books* or sheets (Summary Sheets, Summary of Milk Records, Annual Statement, Annual Register, Yearly individual Cow Report, Annual Summary, etc). In these books a page is reserved for each cow on which are entered all the results calculated for each cow for the whole year of recording. This type of book is almost always kept at the office of the milk recording organisation.

Apart from the above mentioned sheets there are often, in the various organisations, other books and sheets for entries of all kinds (feeding books, list of members, list of cows, etc.).

Frequently the notes made at the farm or the results of testing are written out by the owner or Recorder in the form of *reports* on printed forms issued by the milk recording organisation or central office and which are used as a basis for calculations and subsequent registrations. Generally the owner (and Recorder) keeps a copy of the report or the reports are only extracts from the byre books, or milk recording books or sheets kept by the owner or by the Recorder.

These reports naturally vary considerably in form. Often there are reports on each record, in other cases the data calculated for a recording period are sent, in addition there are monthly reports, annual reports, etc.

In Canada, before being forwarded, the annual reports written by the owner ("Summarized Statement") should be confirmed officially and sworn to before a public notary or justice of the peace, but usually the owner's reports are confirmed or disproved by the Recorder's reports which are forwarded at the same time or separately.

V. — CALCULATION OF RESULTS.

The data furnished by the reports of the various countries on the calculation of results of milk recording are as incomplete as the data on registration of records, though from them it may be gathered that for calculations of results there is considerably more uniformity than for registration.

Three principal figures are given which in almost all cases are obtained as the final result of milk recording, namely; the milk production during the year's recording period or during the lactation period — the average percentage of butter fat in the milk — the yield in butter fat by each cow during the course of the year's test, or during the lactation period.

For calculating the figures of the year or the period of lactation, the total duration of recording is divided into *periods* the length of which correspond to the interval between two of the Recorder's visits.

The *quantity of milk* is generally estimated in this way: the quantity of milk ascertained on the testing day for each cow is multiplied by the number of days in one milk recording period. By adding the quantities of milk obtained in this way for each testing period the annual yield or lactation yield per cow is obtained,

This procedure is based, therefore, only on the results of the Recorder's records and is used in the majority of countries.

In countries where milk recording is done either wholly, or in part, by the owner, his figures are generally accepted. Where the tests made by the Recorder only verify the owner's figures the greatest importance is attached to those figures and it is only when considerable differences exist between the Recorder's and owner's results that another method of calculation is employed.

In South Africa and other countries where the owner tests daily, the results obtained by him are simply added up and the monthly results calculated. Their sum gives the annual yield or lactation yield per cow.

When tests are made less frequently, the milk recording period, represented by the number of days between two of the Recorder's visits is divided into sub-periods, as is the case in the Irish Free State. In this case the quantities of milk determined by the owner in an entire recording period are added up and the sum is multiplied by the number of days in a sub-period, thus the total quantity of milk produced during the entire testing period is obtained. The sum of the results of each period of milk recording gives, in return, the total result for the duration of milk recording. Or else, as in Southern Rhodesia and also the United States in part, the sum of the results obtained in a testing period (for example 1 month) are divided by the number of tests made and the quotient is multiplied by the number of days in the said milk recording period (30).

In all these cases account may be taken of: (1) the owner's figures only (Austria; after being verified by the Recorder) — (2) both the owner's and the Recorder's figures (United States, Rhodesia and South Africa) — (3) either only the owner's figures or only the Recorder's figures, according to the decision of the milk recording organisation (Esthonia).

In France and Holland, the calculation of milk yield is made very differently. There, the average quantities of milk weighed on every recording day in a year are first determined by dividing the sum of the quantities of milk ascertained by the number of tests and multiplying the result by the total number of days of lactation; this method expresses the true milk yield with the greatest approximation.

Calculations are naturally made differently when it is a question of short tests which are only occasionally made at present in the United States and Japan. In the 30 day test, made in Japan, the sum of 3 tests made in the month is simply multiplied by 10. In the 7 day test simply the sum of the results of daily tests are obtained as the final result. Naturally, the figures arrived at in this way do not give results per annum or per lactation period, but only the milk yield in the short milk recording period.

Calculations of the *average proportion of butter fat in the milk* is simplified by the fact that testing for butter fat can hardly ever be done by the owner, but only by the Recorder and only once during the milk recording period. Generally the average percentage of butter fat is obtained by dividing the sum of all the fat percentages ascertained by the number of tests, or else, when testing for butter fat is done for each milking separately, the daily averages are first calculated which permits the annual average to be arrived at.

In this respect also the method used in Holland differs from that of other countries. Here, the average percentage of butter fat is obtained by dividing the sum of the quantities of butter fat determined on the testing days by the sum of the quantities of milk ascertained on the same days. The quantity of butter fat obtained on the testing days is ascertained by multiplying the quantity of milk obtained by the percentage of butter fat.

The *quantity of butter fat produced* is estimated by multiplying the quantity of milk obtained by the proportion of butter fat and dividing by 100, which gives the yield in butter fat in kg., or else by multiplying by 10 which gives the yield in grammes. Generally the yield in butter fat is estimated for each milk recording period by the quantity of milk produced during a testing period and the proportion of butter fat; by adding together all the quantities of butter fat for the various periods the yield in butter fat per annum or per lactation period is obtained. Sometimes, however, the quantity of butter fat is calculated, either per lactation period or for the whole milk recording year, by the annual yield in milk and the average proportion of butter fat in the milk (Irish Free State, Holland).

In some cases the *butter yield* is also estimated by multiplying the yield in butter fat by 1.18.

In Holland, in addition to the annual quantities of milk and butter fat and the annual average in butter fat, the *daily average quantity* of butter fat per cow is estimated by dividing the sum of the quantities of butter fat determined for each day of recording (quantity of milk on the recording day \times the percentage of butter fat \times 10) by the number of milk recording days.

In order to express the milk and butter fat yields by a single figure and thus render yields comparable, in some countries, such as Scotland, Latvia and Norway, the yields are expressed at their estimated equivalent of milk of 1 % butter fat.

In some cases *corrections* are made of yields from *animals of different ages and calving intervals varying in length*. Thus, in Belgium, the yields of cows which calve for the first time at 2 years old are multiplied by 1.54, after the second calving, by 1.25 and after the third, by 1.11. For a cow which calves again more than 12 months after the preceeding calving, 5 % is deducted from the yield for each months delay in calving, while 5 % is added for each month in advance. This correction should not exceed 15 %.

For accurate results the *theoretical position of the testing day in the period of milk recording* is important. It is, in fact, a question of ascertaining, for calculation requirements, if the testing day should be considered as situated at the beginning, middle or end of a milk recording period. In the first case it is admitted theoretically that the results of the testing day are typical of the actual yields of all the days, up to the following test. In the second case, the testing day is typical of the days of the second half of the preceeding recording period, and of the days of the first half of the following recording period. In the third case, the testing day is typical of the preceding days since the last test.

For calculation purposes, in the majority of cases, the testing day is considered as being situated at the end of the recording period; only in a few countries, such as Scotland, Holland and the United States, the middle of the recording period is taken as the position of the testing day.

The *extent of the milk recording period* for which results are calculated is generally identical with the length of the total recording period (see TABLE II). Sometimes, however, the results are calculated separately for a certain period of time. Thus in Spain, where yields are generally calculated by lactation, for a cow with a lactation period of more than 300 days, but less than 365 days, separate calculations are made for the results of the first 300 days and for the entire lactation period. If lactation lasts more than 365 days the yields of the days following are calculated and entered separately.

In tests for milk yield in which the *feed consumption* is also determined, naturally all calculations relating to this are made. While frequently they are limited to indicating the feed ration, to calculating the total quantities of the various feeds per period and per milk recording year or to estimating the total consumption of starch values or forage units in the same periods of time, in addition, sometimes calculations are made at each test on the *costs of feeding*, the *relation between the yield and the feed consumption* and also, taking these calculations as a basis, the turn-over of the various cows. For this last calculation it is necessary, as an intermediate step, to know the value of the products according to the quantity of milk and the prices of milk or dairy products.

Sometimes the feed consumption is also estimated by *groups* of cows, as is the case in Lithuania. If then, during a recording period for which these estimates are being made, a new cow is added to the group, the number of cows existing during the whole recording period is multiplied by the number of days in that period and to this is added the number of days the new cow has been present. The number of *feeding days* per group thus obtained is multiplied by the quantity of feeds consumed per day per head.

As the relation between *yield and feed consumption*, the production of milk and also of butter fat is usually taken per 100 kg of starch values or 100 kg. forage units consumed.

In order to facilitate comparison between animals, calculations are also frequently made, as for example, in Spain, Poland and Switzerland, on the *milk yield per unit of live weight* and sometimes also the *butter fat and butter yield per unit of live weight* (generally 100 kg).

In South Africa, as has already been said, the content of *solids-not-fat* in milk is also determined. Taking the test as a basis, the total quantity of solids-not-fat is calculated per lactation period by multiplying the test by the number of days of a milk recording period and adding up the results of the various periods. In addition, by dividing the sum of the percentages of solids-not-fat by the number of tests, the average percentage of this dry matter is arrived at.

Taking the annual results as a basis, the *average yields of a byre or of herds* are also very often estimated by dividing the sum of the yields of all the cows tested in a byre or of a herd by the number of cows tested. In the same way, the figures, concerning feed consumption, feeding costs, etc., are expressed in the form of average figures per byre.

Finally, in many countries, the *average yields per milk recording society or per breed association* are also indicated.

VI. — UTILISATION OF RECORDS.

The primary and immediate aim of milk recording with regard to the breeder is to permit him to practice breeding on a more stable basis which is not possible without determining the yields of the cows. Taking the numerical data provided by milk recording, the breeder can eliminate bad milkers by sending them to the butcher, selling them or else by not using their descendents for reproduction.

On the other hand, he can use the cows which have been distinguished in yield tests for increasing and improving his stock and above all can choose the sires from sons of cows which are the most productive.

The results of yield tests also permit the breeder to improve *methods of feeding and handling* of dairy cows. By observing the changes produced in the yields by modifications in conditions of feeding and handling, the breeder can arrive at the best conditions from both these points of view.

Results of milk recording are utilised in the farms of breeders for breeding, feeding and the handling of dairy cows wherever milk recording is practiced and the suitable application of conclusions drawn from the results of recording is often aided, guided and supervised by *advice* to the breeder given by the milk recording organisations.

For the breeder milk recording increases considerably the value of each animal recorded as he can draw conclusions as to progeny, but in the form in which it is carried out at present in the majority of countries its importance is far greater than this immediate value for the breeder. If it is executed by organisations whose scrupulousness, impartiality and accuracy cannot be doubted, the records are also of value for prospective buyers of dairy cows. The records, as a matter of fact, at present play a very important part in the trade in breeding animals; they produce an *increase in price* which is not limited to recorded animals, but also applies to their progeny and their whole families. A yield certificate therefore represents an economic factor of the first importance and, even if this factor cannot be expressed in cash, it must be admitted that the increase in price of $4\frac{1}{2}$ millions of cows recorded and of their progeny, the number of which greatly surpasses the said figure, represents an extraordinary increase in value, due solely to milk recording.

The stimulation the breeder receives from this increase in price and value greatly encourages the work of systematic stock-breeding carried out with a view to increasing and assuring production and causes a progressive accumulation of hereditary factors on which high yields are dependent, and results, therefore, in an increase in national wealth which can never be valued too highly.

Certification of performance is done in different ways in the various countries. Generally it is done in such a way as to encourage the obtaining of high yields or at least determined minimum yields which are already on a high level.

This is why it is generally limited to having a *simple registration and publication of the results of milk recording* in reports, reviews, etc., as is the custom everywhere, as the basis for the other forms of certification of yield. Also, the

performances in different sorts of competitions are utilised. For example, in the majority of countries, when *awards are given* at shows, the greatest importance is given today to the attested performance; on these occasions, in addition to a money prize or object of value, a diploma is given which, in case of sale, results in an increase in the price of the animal. Competitions, in the exact sense of the word, may also be organised in which the animals with the highest yields obtain prizes and diplomas. These competitions can be organised locally or can include large areas and even entire States. A particular example of this is the « Concours de la Meilleure vache » in France which embraces the whole country and is chiefly based on the performances certified after recording.

In the majority of countries, the aim of milk recording in respect to stock breeding is particularly emphasized by registering the records in *Herd-books and Pedigree registers* and thus putting these results at the immediate disposal of systematic breeding. In this case, the extracts from the Herd-book also include data on performances, so that the buyer of the breeding animal obtains at the same time information on ancestry and yields of the animal and its ancestors. This procedure has the great advantage that heredity of yields may be at once verified.

In many countries special books have been instituted for animals which have reached certain minimum yields and which satisfy certain conditions, for example, the “Rinderleistungsbuch” in Germany, the “Register of High Yielding Cows” in Scotland, the “Register of Dairy Cattle” in Ireland, the “Livre d'Elite” in France, the “Register of Dairy Cattle” in England, the “Livres d'Elite” in Hungary, the “Record of Performance” in Canada, the “Advanced Registers” or “Registers of Merit” in the United States, Japan, South Africa, Rhodesia, Australia and others in New Zealand.

In the majority of these books only pure-bred animals are registered, but there are also *performance registers for animals without pedigrees* (“grade cattle”) in which it is only required that the sire should have been registered in a Herdbook and that the animal must have attained the standard yield required.

In the majority of cases registration in these registers is based on the normal milk recording and special tests are only rarely made, as in Germany for the “Rinderleistungsbuch” and in Canada for the “Production Certificate”. For these special tests more severe conditions are usually imposed and they are carried out in a more precise manner than can be done for the ordinary milk recording.

Entry in such a book or yield register and the resulting increase in the value of the animal acts as a great stimulant to the breeder to arrive at the minimum yields which are generally very high.

A form of yield attestation which greatly resembles the performance Registers and has the same practical value are the *certificates or marks subject to standard yields* such as the “Certificates of Merit” in England, the “Marque de Bonne Laitiere” (L) in Switzerland, the “Production Certificate” in Canada, the “Record of Performance Certificate” and the “Statement of Performance” in South Africa and Rhodesia, the “Production Record Certificate” in

Australia; the "Certificate of Record" and the "Statement of Record" in New Zealand.

Entry in the Performance registers with regard to the issue of such certificates and distinguishing marks, such as the "Marque de Bonne Laitière" in Switzerland are above all subject to the obtaining of certain *standard yields*. A comparison between the standards used in the different countries and for different books and certificates is unfortunately impossible as conditions differ too greatly. Besides the differences between the methods of recording and calculating, and above all the various lengths of recording periods, the standards vary generally according to the breed and age of the animals and are expressed either in quantities of milk, or quantities of butter fat, or in quantities of milk at their estimated equivalent of milk of 1 % butter fat, or in quantity of milk with a given minimum content of butter fat, or in corrected quantities of milk and butter fat, so that there are hardly two figures which can be compared.

In Germany the minimum yields for entry in the German «Rinderleistungsbuch» are expressed separately for milk recording carried out during the whole year and for 10 months recording and lower standards are required of cows under 5 years of age.

In Scotland the standards are expressed in gallons of milk and in % of butter fat separately for heifers after the first calving and cows after many calvings.

In the Irish Free State a minimum quantity of milk is required, a minimum butter fat content and a minimum quantity of butter fat produced. Standards differ for the two breeds that are raised in that country.

In England and Wales there is one standard for one year's recording and another for 3 year's recording; in both cases the quantities are different according to the different breeds.

In Hungary, besides the judging of type and conformation, minimum quantities of milk and butter fat are required which differ according to the breed and to the book in which the animal is to be registered.

In Switzerland, minimum quantities of milk and butter fat in kg. are required, but these vary according to the number of calvings, the length of gestation, the period of mountain pasturing and the altitude of the pastures. For the Hérens breed, smaller yields are required than for other breeds.

In Canada, the standards for the "Record of Performance" vary according to the breed and age of the cow, those for the "Production Certificate" are uniform; they are expressed for 12 months in lbs (454 g) of milk and butter fat, but require special tests.

In the United States the standards of the Herd-books for the various breeds are different.

In Rhodesia and South Africa, the standards are expressed in lbs of butter fat and a minimum and maximum period of lactation is required.

In Australia, the standards are also expressed in lbs of butter fat, but vary according to the age of the cow, up to 5 years.

In New Zealand there are several systems. For the "Certificate of Record" there are three different classes, the standards vary according as to whether the

examination lasts 365 or 305 days and according to the age of the animal. For registration in the "Group Herd Testing" minimum yields are also required which differ according to the age of the animal. In all cases the yield is expressed in lbs of butter fat.

These indications of the essential differences between the minimum yields or established standards are sufficient to dispell any doubt as to the impossibility of comparing the standards themselves. In most cases, the standards may be found in the reports of the countries.

Besides the yield there are other conditions for registration in a performance register or for obtaining a yield certificate; thus there are requirements in respect to the *length of gestation*. In Scotland, it is necessary that the calving subsequent to the recorded lactation (which should end on 31 December) should take place 14 months, at the latest, after the preceeding calving. In England, and Wales, for obtaining a "Certificate of Merit", 3 calves in 3 years of milk recording are required. In Hungary, calving subsequent to the recorded lactation should take place not later than 14 months after the preceeding calving. In Switzerland, in the case of a calving more than 14 months after the preceeding, the minimum requirements are increased for granting the "Marque de Bonne Laitière". In New Zealand, before giving the 1st class Certificate of Record, a maximum delay in calving of 455 days is required; for the 2nd class Certificate of Record a maximum delay of 485 days; if the delay is still longer only a 3rd class Certificate can be given. These figures only refer to 365 day recording; for the 305 day recording, they are reduced by 60 days.

Other conditions for entry in the performance registers or for the issue of certificates of minimum yields are normal feeding and management, good health, good constitution, good type, high number of points at the judging for qualification (Hungary), etc.

Milk recording is of particular value for the *selection of sires*. In many countries, systematic selection of these bulls has been undertaken based on the yield of the dams, daughters or other members of the family. Either entry of the bulls in a Herd-book is subject to the condition that the dams and sisters produce certain minimum yields, or the bulls are accepted under certain conditions in the performance registers, "Livres d'Elite", "Advanced Registers", etc. Thus, in Germany the bulls can be accepted by the "Rinderleitungsbuch" when 4 of their daughters have reached the standard yields. The same rule applies to the "Record of Performance" in Canada, where each of the 4 daughters should be by a different dam. In England and Wales, the bulls can obtain a "Certificate of Merit" if they are pedigree bulls whose dams and sires' dams have reached the prescribed standard during 3 successive years. In Hungary, the sons of dams registered in a "Livre d'Elite" which are ranked as category II at the time of judging, are admitted to the register of merit. In Switzerland, a bull can be entered in the Herd-book only if he is the son of a "Bonne Laitière".

In some countries, such as Scotland, England, the United States, Australia and New Zealand, there is also a system of «Proven Sires» or «Certified Bulls» in which the value of a bull is calculated and confirmed as a sire of high value according to the compared yields of the dam and the daughters.

In Italy, and other countries, the milk records are also used to establish *stock-breeding centres* where a remarkable sire is assigned to a group of tested cows. These stock-breeding centres should provide good breeding animals. In Luxembourg, the "Fédération des Sociétés d'Elevage" decided, as from 1936, to sell only the sires whose progenitors possess a performance certificate.

Finally, the results of milk recording are a *source of data* for research and are utilised as such in the majority of countries. Researches: on feeding and management of animals in relation to milk production — on the different influences to which this production is subject, but especially on heredity as regards capacity for this production, are carried out on the basis of these records. Discussion on these researches would be outside the scope of this article. It is sufficient here to say that, on the basis of data provided by milk recording, results have already been obtained in research which are of the greatest importance both from the scientific viewpoint (genetics) and for practical stock-breeding.

S. TAUSSIG.

MISCELLANEOUS INFORMATION

Animal Husbandry.

1ST MEETING OF THE ITALIAN CORPORATION OF ANIMAL HUSBANDRY AND FISHERIES. — This Corporation, recently constituted in conformity with the provisions of the new Italian corporative legislation, held its first meeting from 7 to 9 January, 1935.

The first sitting took place under the presidency of S. E. B. MUSSOLINI, Head of the Italian Government. The questions containing in the agenda were as follows:

- (1) Protection of typical cheeses and regulation of voluntary « Consorzi » of producers.
- (2) Regulation of the production and sale of milk for food and industrial purposes and proposed measures for increasing consumption.
- (3) Measures for insurance and social assistance for fishermen.
- (4) Renewal of the acts completing the collective economic agreement for the regulation of the sale of milk in the city of Rome.
- (5) Organisation of the sale of fish in bulk.
- (6) Regulation of the motorisation of fishing boats.
- (7) Relations between fishing material and the preserved fish industry with a view to increasing national production.
- (9) Examination of the conditions of manufacture of net used in fishing for tunny fish, also conditions of marketing tunny fish preserved in oil.
- (8) Animal production in the country and regulation of imports of butchers meat.
- (10) Various questions.

After having examined these questions with care and attention the Corporation adopted, *inter alia*, the following decisions:

Regarding the protection of typical cheese and the regulation of voluntary « Consorzi », the following motion was approved:—

« The Corporation of Animal Husbandry and Fisheries, after examining the question of the protection of typical cheeses and the regulation of voluntary « Consorzi »

declares

(1) the utility of adopting, with a view to the better protection of the cheese industry and the typical cheeses most in demand on the market, as much as for internal consumption as for export, a special mark which will guarantee the quality and special characters of each, taking into account the organoleptic characters and the particular composition of each kind of cheese, this composition being previously determined by the organisations of the State.

(2) that these marks should be established by the voluntary « Consorzi » of producers which, on the proposal of the Provincial Councils of Corporative Economy, would be authorised by the Ministry of Agriculture in conjunction with the Ministry of Corporations.

(3) that the voluntary inter-provincial « Consorzi », constituted for the protection of typical cheeses, should limit their action to those products which, being more in demand in the home market as well as abroad, have the greatest influence on the cheese industry of Italy (dry cheeses, gorgonzola, pecorino, caciocavallo, etc.).

(4) that, for each type of cheese, there should be only one « Consorzio » per section, corresponding to certain districts of production and certain types of products.

In the special case of dry cheese, the Corporation decides to propose to the Central Corporate Committee, that only one voluntary, inter-provincial « Consorzio » for dry cheeses should be recognised, which will include sections for reggiano-parmigiano, lodigiano, lombardo and emiliano, (reggian-parmisan cheese, cheeses of Lodi, Lombardy and Emilia).

The Corporation also recognises

that it is opportune to organise, through the technical and syndical organisations, an activity which would direct the use of milk in greater quantities towards other forms of habitual usage (cream, butter, human food, feeding calves) and to regulate the distribution, chiefly in the reclaimed regions, of cattle for farm work and butchers meat, preferably the types most suitable for milk production.

Regarding the questions relative to the regulation of the production and sale of milk for food and industrial purposes and the measures for increasing consumption, stock-breeding, regulation of imports of butchers meat, the following motion was approved:—

« The Corporation of Animal Husbandry and Fisheries, after having examined the problems of the production and marketing of milk for direct consumption, also those of stock-breeding and the importation of butchers meat:—

considers that the economic bases of national animal husbandry should be improved and a greater equilibrium should be established between the two principal animal products, milk and meat, by activities directed towards:

assuring fair prices for products and in proportion with the costs of production;
increasing the consumption of milk in the natural state and also milk foods;

reducing the repercussions caused on the national market by the importation of meat and cattle from abroad;

improving breeds of Italian cattle, chiefly from the point of view of production, and increasing the market value of products.

it also decides

to submit the following measures to the Central Corporative Committee for approval:—

(1) to define the quantities of butter fat that should be contained in each type of cheese and to punish severely all fraud in the use of margarine in the preparation of food products;

(2) (a) to encourage as much as possible the use of milk for consumption in the natural state and to regulate the institution and functioning of « Milk Centres » which should be considered as institutions existing solely for public hygiene and utility without any speculative objectives or any aims of a profit-making nature, and which should be administered by the categories interested on a corporative basis;

(b) to organise, in towns where « Milk Centres » do not exist, « Consorzi » on a corporative basis charged with supervising and regulating the production of milk intended for consumption in the natural state, also its distribution to consumers;

(c) to absolutely forbid the sale of milk in an itinerant form either by traders or producers;

(3) to entrust a corporative organisation, controlled by the State with the task of regulating the entry of quotas of imported cattle from exporting countries, and their distribution throughout the country with a view to avoiding disorganisation of the national market;

(4) to establish quotas also for imported fresh, frozen and chilled meat, also bacon, fats and manufactured products, and to fix the maximum quantity per annum which should be admitted into the country, based on the true necessities of national requirements;

(5) to regulate the cattle markets in the large centres of consumption, with a view to giving individuals or associations of producers the possibility of marketing their beasts directly, and thus avoiding all forms of monopoly;

(6) to reorganise the slaughter of cattle on a more economical and modern basis by eliminating unjustified charges and losses of all kinds;

(7) to encourage stock-breeding societies to collaborate, in a more efficacious manner, with the activity of the organs of the Ministry of Agriculture in each province with a view to improving animal husbandry chiefly in respect to the determination of the characteristics of breeds to be raised in the various regions, the composition and application of programmes for qualitative improvement, and the various activities for improving the market value of Italian breeds and their products;

(8) to equilibrate taxation on food products so as to correspond more exactly with the present value of cattle, taking into account that the consumption of beef, mutton and pork and their derivatives should be encouraged as they bear most of the charges at present, while other meats, such as chicken and prepared foods which afford the greatest markets for imports, are exempt from taxes;

(9) to revise the present tariffs on transport by rail and sea (cattle, milk, stock feeds, etc.);

(10) to develop the experiment organisations for animal husbandry and cheese production, and also laboratories entrusted with the control of milk foods with a view to the suppression of adulteration and fraud.

Agricultural Industries.

IV INTERNATIONAL TECHNICAL AND CHEMICAL CONGRESS OF AGRICULTURAL INDUSTRIES, BRUSSELS, 15-28 JULY 1935. — The "International Commission of agricultural industries" has limited to 10 the number of question which will be treated according to priority and which will form the subjects of Reports printed and distributed to all members of the Congress before the opening. These questions are as follows:—

Division: General scientific studies:

(1) Vitamins — their preparation and use in food industries;

(2) *Unification of methods of analysis :*

On this question it is observed that all powers are granted to the Bureau of the Commission to present the title of this question under whatever form appears to be most suitable.

Division II: *Agronomical studies :*

- (3) The physiological significance for industrial plants of the reaction of the sun and the action of manures on the content of industrial plants and their useful elements.

Division III: *Industrial studies :*

(4) *Liquid residues :*

This question should be studied particularly from the standpoints of the sugar industry, distilleries, breweries, yeast manufacture and dairying ;

(5) *Purification of sugar juices :*

This question has already been the subject of a questionnaire addressed to the sugar industries the text of which appeared in the *Monthly Bulletin of Agricultural Science and Practice* of 1934, No. 12, p. 558-559.

- (6) The utilisation of steam in the sugar industry.

- (7) The yield in distilling.

- (8) Preparation and concentration of musts.

- (9) The pasteurization of milk with regard to hygiene and the milk industries (butter and cheese making) ;

Division IV: *Economic studies :*

- (10) Investigations on the optima conditions for purchasing wheats on the basis of their food value.

For all information applications should be made to the " Commission Internationale des Industries Agricoles " 156 Boulevard de Magenta, *Paris*, or the " Comité Belge d'organisation ", 133 Chaussee de Charloir, Brussels.

THE INTERNATIONAL FORTNIGHT OF THE DAIRYING INDUSTRY AT BRUSSELS. — An important Fortnight of the Dairying Industry will be held at Brussels from 15 to 26 May, 1935, in the temporary exhibition hall of the Universal Exhibition.

This exhibition will arouse great interest everywhere. The following groups and sub-groups will be included:—

Group 1: *Dairying industry products :*

- (a) natural milk and butter;
- (b) cheeses (soft curd without moulds, soft curd with moulds, hard cheeses, blended cheeses);
- (c) prepared milks;
- (d) other milk preparations.

Group 2: *Dairying industry material:*

- (a) farm utensils;
- (b) dairying materials;
- (c) laboratory apparatus, starters, chemical products, instruments.

Group 3: *Training, associations:*

- (a) dairying training: courses, schools, didactic material, reviews, books;
- (b) associations: co-operative organisations, legislation, publicity.

The Fortnight is organised under the patronage of the International Federation of Dairying and the three great Dairying Associations of Belgium: the "Société Nationale de Laiterie" the "Union Nationale des laiteries belge" and the "Office d'inspection des laiteries du Boerenbond Belge".

The exhibition is preceded by a great national and international butter competition the results of which will be announced at the opening of the Fortnight.

Samples of butter will be examined twice: the first time the jury will judge the appearance, aroma, taste and texture: the second time, eight days later, the conservation will be judged. In the interval the butter will be conserved under conditions indicated.

Further information can be obtained from the "Commissariat general du Gouvernement", *Brussels*, or from the "Secretariat de la Quinzaine", rue des Recollets 24, *Louvain*.

A. P.

BOOK NOTICES (*)

STANFORD, E. E. *Economic Plants* - New York, London, D. Appleton-Century Company Incorporated, 1934, 571 pp. 376 ill.

The author writes in the preface to this book that up to the present there does not exist a work which can be used by students in universities and agricultural schools as a manual on the cultivated plants of the world and the use man has made of them. A long experience in practice and teaching and extensive correspondence have enabled him now to collect a very large amount of information and to unite it in a volume, the number of pages of which render it very readable. All the subjects are treated in a scientific manner, but at the same time comprehensible. The illustrations are first class and the reproduction of the photographs and drawings is excellent.

It goes without saying that, in embracing so vast a subject, he has had to make a choice among the subjects treated. This choice has been influenced by the fact that the author addresses himself to students in the colleges in the United States. He has, therefore, concentrated on useful plants which enter into the economy of the country, but as this immense country is interested, in one way or another, in almost the totality of human products, this volume necessarily is of world-wide interest.

The first two chapters, entitled «The Plant Kingdom» and «Cells, Tissues and Organs» are purely botanical. It was an excellent idea to precede such a book by an abridged treatise on the plant, an idea made even more successful by the fact that the author has not limited himself to copying any manual, but has written an entirely original text accompanied by plates drawn by his collaborators, some of which surpass in clearness and precision those which are usually encountered. But why has the author limited himself to systematics and anatomy? Why has he not added a short chapter on plant physiology? Why has he also entirely omitted genetics, and why does he not speak of the influence selection has had on the improvement of breeds. Certainly the

(*) Under this heading are included short synopses of book received for review.

book would have been very much bigger, but space could have been gained by abridging the parts on the systematic of thallophytes, bryophytes and pteridophytes, which have not a very great economic interest.

Forestry products in a wide sense (wood and its products, resins, tanning matter, cork, latex, rubber, jelutong, gutta-percha, chicle) occupy 130 pages, that is, one fifth of the volume. These chapters are most interesting and contain information which would otherwise have to be sought for in a great number of heterogeneous sources. Mention must also be made of the excellent and unique illustrations, provided for the most part by the forestry services of the United States. Wood industries are treated very completely, for example, the manufacture of veneers which reached such large dimensions during the last few years.

The chapter devoted to rubber and other products derived from various kinds of latex is original and in it will be found information on the activities of the Seringeiros of the Amazon, on the *Castilla*, on the *Euphorbia Intisy*, on the « milk-weed » (*Asclepias subulata*), the guayule (*Paethenium argentatum*), jelutong, balata, gutta-percha, the chewing-gum industry, etc. It is, however, to be regretted that all these plants, certainly interesting, but which only gave rise to small local industries, occupy such a large place in comparison with the only rubber plant which has a world-wide interest, that is, *brasilensis*. The chapters on *Hevea* should in any case be revised, being incomplete and containing errors (especially the chapter on the coagulation of latex).

The fibre plants, cotton, flax, hemp, jute, ramie, abaca, agave, and *Fourcroya*, coconut, raffia, *Tillandsia*, kapok, are well presented from the botanical and industrial point of view.

The chapter on paper manufacture is excellent and a better idea of this industry in general could not be given in the same number of pages, an industry which is closely linked with the forest regions in the world.

It is evident that it is difficult to treat cereals and gramineous forage plants when limited to only about 60 pages. The specific interests of the United States have had an influence here more than elsewhere. This explains, for example, why the author has treated maize in detail.

Sugar and sugar plants are discussed in the tenth chapter. Sugar cane and sugar beets are suitably treated, though in our opinion, there should have been a photograph of the interior of a modern sugar factory instead of one of the three photographs of primitive factories. The author has not forgotten to mention palm sugar (he has only forgotten *Arenga saccharifera* which is no less important than *Phoenix sylvestris*), sorghum sugar, finally an American product, maple sugar.

The volatile oils are distinguished from non-volatile oils. In the eleventh chapter only the first are discussed, namely; cottonseed oil, olive oil, coconut, palm, and castor oils, all non-drying oils, and afterwards the drying oils, linseed and aleurites.

The twelfth chapter is entitled « Plants and Nitrogen: Protein Products ». Here is treated the fixing of nitrogen by bacteria and the part played by leguminous plants in this process. These plants are then discussed as forage plants, plants for crop rotation and for human food. Nuts, a name commonly given to the fruits of very varied origin, will be found as providers of proteins. Chestnuts, pecan, (the fruit of *Carya Pecan*), « hickories » (fruit of *Carya ovata*), walnuts, almonds, Brazil nuts (from *Bertholletia excelsa*), filberts and pistachio nuts are all included in the same chapter.

Fruits are then discussed. It is difficult to understand why the author has considered it necessary to limit himself to species cultivated in the United States and why he does not even mention the banana which has such a large place in the diet

of the inhabitants of his country, banana plantations also having attracted so much American capital. Another omission is the wine industry, which, in the part on grapes, is hardly mentioned.

Spices and Aromatic products, peppers, nutmeg, cinnamon, sassafras, cloves, mustard, ginger and vanilla and the essential oil plants occupy a large place.

Beverage-yielding plants, coffee, tea, cacao, cola, guarana and maté are discussed fairly completely, but a lack of good sources of information and errors and inexactitudes will be observed.

The last chapter is devoted to some medicinal plants, the opium poppy, coca leaves and cocaine, quinine, cascara, ginseng and a short review is given of the cultivation of medicinal plants in the United States.

To sum up, this book is most valuable, unique of its kind and can be of great service to agriculture in all countries in making known to the public the innumerable uses of plants and their products. This, however, does not prevent the choice of subjects being not entirely satisfying and often an impression is given that the author does not sufficiently take into account the economic importance of the plants he has chosen. How otherwise can be explained the complete lack of documentation on the potato and tobacco in a book where condiments and aromatic plants, of infinitely less importance in world economy and in the United States, occupy about thirty pages? It is to be hoped that a new edition will appear soon and that the author will take justified criticism into account.

W. B.

Dr. JACQUES-PIERRE BLAIZOT. «La vaccination contre le thyphus exanthématique», 132 p., 36 fig.. La Chapelle-Montignon (Orne), 1935.

Exanthematous thyphus, which was the cause of the loss of nearly a million human lives during the war 1914-1918, is still a scourge greatly to be feared. From 1. January to 15 September, 1934 in the countries most affected, a considerable number of cases have been recorded: — the Belgian Congo, 900 — Egypt, 7660 — South Africa, 4900 — Chili, 5725 — Guatemala, 143 — Mexico, 256 — Persia, 1082 — U. S. S. R., 30 000 — Poland, 3800 — Rumania, 2000 — Jugoslavia, 2100.

The systematic destruction of the flea, transmission agent of the disease, is insufficient, from a practical point of view, as a prophylactic measure. There remains vaccination, which has not given sufficient security up to the time when the author experimented, in Morocco, with the method of Dr. Georges BLANC.

This method consists essentially in vaccinating with the living virus treated with bile. The vaccine is prepared two or three hours, at the most, before its use, employing guinea-pigs at the third day of the disease.

The animal is chloroformed and the vaginal parts the spleen and the left suprarenal capsula are removed. The organs are ground, physiological serum is added and it is the filtered through sterile gauze. This mother-solution is taken to the place where vaccination is to be performed, 5% bile is added and, at the end of a quarter of an hour the syringes may be filled and inter-muscular vaccination performed.

The experiments made on 23 June, 1934 on 723 men, and again on 12 December on the whole population of an infected douar (850 persons), gave remarkable results.

The author concludes his very important work by stating that vaccination with living virus treated with bile completely prevents the return of epidemics.

G. R.

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MONTHLY BULLETIN

OF

AGRICULTURAL SCIENCE AND PRACTICE

EDITORIAL

DAIRY COW TESTING THROUGHOUT THE WORLD

The volume published by the International Institute of Agriculture in 1926 under the title of "Dairy Cow Testing in Different Countries" has been sold out some time ago. In the course of the 10 years that have elapsed milk recording has developed with great rapidity and it appears to be indispensable to give a new and accurate picture of the work that has been done in the various milk producing countries and the results obtained.

The new volume which is now presented to our readers has been prepared on entirely new lines. The results of an enquiry into milk recording begun in 1925 have been completed and brought up to date and the text rewritten by Mr Stephen Taussig, redacteur of the Bureau of Agricultural Science, and has been approved by competent authorities in various countries. This method of collaboration has given the best results.

According to a general account which was published in the last number of this *Bulletin*, the various aspects of the question of milk recording have been examined with regard to the 32 following countries :—

Europe : Germany — Austria — Belgium — Denmark — Danzig — Spain — Esthonia — the Irish Free State — Finland — France — Great Britain and North Ireland — Hungary — Iceland — Italy — Latvia — Lithuania — Luxemburg — Norway — the Netherlands — Poland — Rumania — Sweden — Switzerland — Czechoslovakia.

America : — Argentina — Canada — the United States.

Asia : — Japan.

Africa : — Southern Rhodesia — Union of South Africa.

Oceania : — Australia — New Zealand.

The whole forms a volume of 200 pages which will certainly be of great service, especially as an English edition will shortly follow the publication in French.

Prof. Georges RAY.

ORIGINAL ARTICLES

OLIVE-GROWING IN VARIOUS COUNTRIES

(3) GREECE AND TURKEY (1)

I. — GREECE.

Greece is the third olive oil producing country in the world. Olive-growing is one of the most important forms of cultivation, in fact, about 14 % of the total area under cultivation is devoted to olive-growing and the products of the olive tree represent 17 % of the total value of agricultural production.

Of the total agricultural area of 3 650 000 hectares in Greece, 500 000 hectares are cultivated in olives (2). The annual average production of olives amounts to about 6 000 000 quintals, from which are extracted an average of 1 000 000 quintals of oil. Production in 1934-1935 is estimated at 1 000 000 quintals against 1 054 000 in 1933-1934. The average annual production of table olives amounts to 300 000 quintals. The number of olive trees in production is estimated at about 60 000 000, and in addition there are a great number of wild olives scattered all over the country, either growing alone or mixed with other trees, constituting real forests.

The olive is generally found in all parts of Greece, continental and insular, but chiefly on the coast. The districts richest in olives are, in order of their importance, Crete, the Peloponnesus, the Ægean islands, and the Ionian Islands and Eubœa, which produce about 90 % of the total amount of oil.

It is at present estimated that the production of olives is worth 1 300 millions of drachmas per annum, while the total annual value of agricultural production is about 8 milliards.

The varieties cultivated are very numerous and are differentiated by the size and shape of the fruit (small, up to 2 grammes; average of 2 to 3 ½ grammes; large, of more than 3 ½ grammes), the colour, shape and size of the leaves, the period of ripening, resistance to certain diseases and pests, etc. A systematic classification has not yet been made of the varieties cultivated because, as in the majority of other olive producing countries, this problem presents certain difficulties.

The Olive-growing Service of the Ministry of Agriculture, directed by Ing. Georges K. PHILIPPOPOULOS, is engaged in preparing a plan for the classification of these varieties (3).

(1) The first article of this series, relating to Spain, appeared in the *Bulletin* of December 1934, p. 536-543.

The second article, relating to Italy, appeared in the issue of January 1935, p. 2 to 8.

(2) Certain authors estimate that the area planted with olives varies round about 400 000 hectares.

(3) C. Evelpidis has made a detailed study of varieties of cultivated olives in Greece in the *Feuille d'Informations Oléicoles*. (Tunis 1933, année 2, n° 15, p. 210-210).

Methods of cultivation vary according to districts. At Mytilene, Volo, Kalamata, etc. the olive groves are fairly well kept. The custom is to perform 3 cultural operations a year on the groves; in October, in the spring and in the summer. In the plains the olive is generally grown with vines, cereals and various leguminous plants. The olive thrives on a great diversity of land. The rainfall is in Greece unevenly distributed, the greater part occurring in winter (November to March). The scarcity of water limits the possibilities of irrigating the groves.

During the war and the years directly after the war, the olive groves were decimated by excessive pruning to such a point that, in 1922, the Government took legislative measures to prohibit the ruthless cutting and pruning of olive trees. The effect of these measures came to an end in 1925 as the high prices for olive oil encouraged the planting of new groves, chiefly with olives the fruit of which was intended for the preserving industry. But, in 1929, when the olive oil crisis passed, the cutting of olive trees began again with the result that the Government, on 18 September, 1933, made a new law by which it is forbidden to cut olive trees without special permission from the official agricultural services and a bonus of 5 drachmas is given for each wild olive budded. In addition, according to the laws Nos. 4173 and 5698 farmers can acquire lands on which wild olives grow at very low prices on condition that these olives are budded and cultivated in a scientific manner. The control of diseases and pests of the olive has been the object of constant attention on the part of the Government of Greece. It was estimated that during previous years the *Dacus oleae* reduced the annual production of olives by about 30 %. This is why the "Olive Banks" and the "Insurance Banks for Olive production" have been founded for controlling on the large scale the pests of the olive. Their expenditure is assured by a supplementary tax on the oil and on table olives.

For the purposes of control, each oil producing region is divided into sectors of 300 000 to 500 000 olive trees. These sectors are treated by gangs of specialised workmen, at a rate of one gang for 100 000 olive trees. A mixture with an arsenite alkaline basis is used against the *Dacus*, 300 grammes for each tree. One workman can treat 300 to 600 trees per day according to the season and the spacing of the trees. It is estimated that a gang will take about 4 weeks to treat 100 000 trees. As a rule four sprayings are given; the first in June-July, the second is not carried out on the driest groves, the third is given to all trees and the fourth is only given in the districts most favorable to the development of the fly; either in the hottest districts or on the sea coast where there are centres of infestation by *Dacus*. The results have not been satisfactory everywhere.

In Greece there are no experimental olive groves, only some olive groves for demonstration purposes are found. These belong in general to private persons and are cultivated according to the advice and direction of the official Agricultural Services. Their aim is to demonstrate in a practical manner the economic advantages which accrue from well cultivated olive groves.

In Greece there is no legislation against cultivation of oil yielding seeds. On the contrary, the Government at present appears to be developing the

cultivation of cotton, from which about 15 000 quintals of oil are extracted annually. Also, in Macedonia, about 5 000 quintals of sesame oil is produced annually for local consumption.

The imports of seed oils amounts to about 40 000 quintals per annum, to which must be added about an equal quantity of margarine and food fats. But, by the Decree of 1 February, 1934, the Government increased the tariffs on oilseed oils. Also the mixture of these oils with olive oil is forbidden and their use is also forbidden in the manufacture of edible oils and fats (1). At present, quotas exist for imports of oil seeds and seed oils.

Taxation on olive growing products varies greatly according to districts though it may be estimated that the various taxes (of the State, Communes, Insurance Banks for Olive Production etc.) amounts to an average of 15 % of the value of the total production per annum.

The land held under olive cultivation in Greece is distributed among some half million growers. The olives are usually gathered from the end of October for 2 ½ to 3 months according the districts and quantities produced. The costs of gathering are estimated at an average of 33 % of the value of the olives gathered. Wages paid daily during the olive growing season 1933-1934, in Crete and Corfu, to women employed in gathering olives varied from 20 to 30 drachmas. Wages paid daily to men engaged in cultivation and other work in connection with the harvest varied from 40 to 60 drachmas. The oil manufacture costs amount to 500 to 600 drachmas per 100 kilos, including the wages paid during harvesting, costs of transport to the factories and the extraction of the oil. Seeing how greatly the olive producing lands are split up, the lack of mills is noticeable. During the last few years co-operative oil factories have begun to be established, there being about 100 of them with a membership of more than 10 000. The greater part of these co-operative oil factories are in the district of Mytilene which produces 30 % of the total oil production. The mills retain in return for extraction 10 to 12 % of the oil extracted.

It has already been said that the number of oil factories existing in the country is insufficient for treating the whole harvest in a suitable space of time. For this reason the olives are kept for some time, either at the farm or in the mill, which has a prejudicial effect on the oils by increasing their acidity. These oils are absorbed by the Italian and French refineries while the good quality oils are consumed in the country or exported to England and the United States. The centres of production of fine oils are in the district of Mytilene, Corfu, Kalamata, Laconia, Chios, Icaria.

No special Stations exist for researches on olive growing, though the official agricultural Services display a great activity in establishing olive groves for demonstration purposes in the various olive producing regions; they also carry on an intensive propaganda for improvement of olive growing by means

(1) See this *Bulletin*, 1932, No. 9, p. 356.

of lectures, the distribution of pamphlets and publications, short courses in pruning, harvesting, oil extraction and the preservation of the product.

By Decree of 24 December 1931, the Government placed a tax on oil for the season 1931-1932 and to keep up the price of oil the Agricultural Bank was charged with the purchase of 8 000 000 *okas* (1) of oil at the price fixed by the tax in order to regulate the exportation of this product. To cover possible losses the State might have to bear, a tax of 1.20 drachmas per *oka* was placed on oil transported by sea and intended for internal consumption.

The husks are sold to the many factories for extraction which exist in the country. They use carbon disulphide as a solvent though the most recently established factories have adopted the use of benzine. A part of the residue oils are exported abroad (about 25 000 quintals per annum), though the greater part is used for the manufacture of soap, 15 000 quintals of which are exported annually from Greece. The soap factories absorb annually about 18 000 quintals of residue oils. In 1933, various measures were taken to guarantee a minimum price for husks as at that time there were disastrous fluctuations in the quotations for this product. The installation of modern refineries has permitted the use of a part of the residue oils mixed with other qualities of pure oil for sale as table oil.

Internal consumption is estimated at 600 000 to 700 000 quintals annually, that is, from 10 to 12 kilogrammes per capita per annum. Therefore there is in Greece an excess of about 300 000 quintals for exportation. Exports of olive oil in 1933 fell to 231 984 quintals as against 278 276 quintals in 1932. Exports of table olives rose to 143 714 quintals as against 130 300 in 1932. In 1934 there was a decided diminution in exports. The principal markets are Italy and France which take 65 % of the total exports; the United States and England come next. In 1933 the control of exports of table olives and olive oil to the United States was established; this control is now extended to all exports of oils from Greece.

The production of table olives in Greece is of some importance. It has already been said that the average annual production varies round 300 000 quintals, of which 140 000 are exported, chiefly to the United States, Egypt, Rumania and Bulgaria, the main export being black olives prepared with salt. The chief centres of production are at Volo, Amfissa, Arta, Styliis and Agrinion. At Kalamata black olives preserved in olive oil are also prepared. There is a co-operative society for the production of table olives at Gazea (Volo). In order to guarantee the authenticity and purity of this product an official control has been established of table olives intended for export which is carried out before the merchandise is shipped.

The first quality oil for export was quoted, in 1934, at 325 French francs per 100 kilos on an average, and the second quality at 290 francs. The prices in the internal markets vary from 32 to 38 drachmas per *oka* for first quality oils and from 28 to 34 for second quality.

(1) 1 *oka* is equivalent to 1.280 kg.

The value of olive oils exported does not greatly exceed that of the import of seed oils and fats (about 75 000 quintals annually), not counting the local production of seed oil which may be at present estimated at about 20 000 quintals per annum.

Greek exporters, if they wish to compete with the Italian and Spanish exporters, should give every care to the presentation and conditioning of the product and should carry out an adequate publicity campaign abroad for their oils which on account of their good quality should hold their own on the world markets.

The Government has planned a vast programme for the development of olive-growing in the country which may be summarised thus:— (1) increase in the total production through more careful methods of cultivation and by exploiting the 70 000 000 olive trees which grow wild in the country; (2) reduction in taxes which burden this branch of cultivation and the relative industry; (3) improvement in the quality of the oil by introduction of suitable varieties and regulation of the methods of harvesting, extraction and preservation; (4) complete prohibition of importation of oilseeds; (5) establishing associations of producers and traders and, in particular, the founding of a special technical organisation for centralising and examining all questions regarding olive oil in the country.

The production of the olive groves in Greece could be increased by one third by the application of good methods of cultivation and by choosing varieties appropriate to each district, etc. In addition, there are millions of wild olive trees which grow on the slopes of hills where nothing else can be cultivated.

At present the whole production of oil is absorbed without much difficulty by the internal market and exports, but the measures the Government is engaged in putting into operation for developing this branch of cultivation and the relative industry will cause, in the near future, a large surplus of olive oil in Greece for which new markets will have to be found.

Internal consumption cannot be greatly increased as the market is nearly saturated. This is why Greek olive-growers should direct all their efforts, in the future, towards exportation (giving great care to the extraction and presentation of the oil, propaganda, etc.) without, at the same time, forgetting the industrial uses of this product.

II. — TURKEY.

Olive-growing is of great importance in Turkey; about a million persons are occupied in this cultivation and the relative industries. The total area on which olives grow is about 750 000 hectares, of which only 160 000 are cultivated. The total number of olive trees is estimated at 75 000 000 which are distributed unequally over the country. Of that number, 15 000 000 are cultivated the rest consist of wild olives.

The production of olives intended for oil extraction rose, during the period 1929-1933, to 1 150 000 quintals per annum from which an average of 210 000

quintals of oil were extracted annually. In years of abundant production as much as 350 000 quintals have been obtained. The climate of Western and Southern Turkey is very favorable to olive growing. The olive grows sporadically on the coast of the Black Sea, though it is found cultivated on the Sea of Marmora from Izmid (a town in Asia Minor situated on the coast east from Constantinople) to the Dardanelles and from the Dardanelles to the Syrian coast. These cultivations, in certain regions, extend as far as 30 to 50 kilometres into the interior of the country, according to local conditions. In these regions plantations of olives cultivated alone cover a large area.

In the provinces of Adalia, Mugla and Milas, there exist groves of wild olives which the Government tries to render profitable by budding.

The principal olive-growing regions are as follows:— (1) district of the Ægean Sea; (2) district of the Sea of Marmora; (3) district of the Mediterranean. The first of these districts possesses the best cultivated olive groves in Turkey and gives the greatest quantity of oil; the second district produces chiefly table olives and the third has the greatest number of olive trees which for the most part grow wild.

The olive grows on a great variety of land showing that it is not particular as to soil. All the same, land situated on the slopes of hills is preferred for olives as the water is able to flow away easily.

The olive trees are planted 4 years after being budded in regular rows 10 metres apart and 8 to 10 metres between plants. In groves where the olive is grown in association with vines the distance between rows is 12 metres.

A systematic classification of varieties has not been made. They are generally divided into two large groups (1) olives for oil extraction (2) olives for the preserving industry. There are a great number of sub-divisions within these two groups, taking their names from the localities where they are grown.

In order to develop and increase the cultivation of olive trees, the Government has taken several measures by which farmers who bud and who regularly cultivate the wild olives situated on lands belonging to the State may become owners of these lands.

There are no special Stations for studying olive-growing questions. In 1931, the Ministry of Agriculture established an experimental nursery in which the majority of varieties cultivated in the countries in the Mediterranean Basin were planted. This principal object of this nursery is to obtain seedlings, to teach and make public the best methods of cultivation, to distribute plants and to carry out budding with varieties of the country.

In Turkey cultivated olives are obtained by budding the wild olives. Usually olives are cultivated in association with vines, cereals and leguminous plants.

During the war, this cultivation made no progress. At present the Government is engaged in developing and increasing it. In 1933, a new law was made for bringing under cultivation the wild olives existing in the country. The new groves were exempted from taxation for 20 years and a bonus is given varying according to the district for each wild olive budded.

The Ministry of Agriculture has founded a Bureau for centralising all questions relative to the control of diseases and pests of the olive. This Bureau distributes spraying apparatus and antiparasitical products free of charge. It also publishes and distributes, gratis, pamphlets illustrating the various methods used for the protection of the olive tree, and awards bursaries for studies abroad.

The agricultural schools of Izmir, Bruza and Adana have courses for teaching the best methods of cultivation to olive-growers.

The fruit is gathered either by hand or by beating down with poles. It is then transported to the places where it is conserved. To prevent fermentation and decomposition, salt is strewn between the layers of olives. By this means the fruit can be preserved for as much as 30 days without alterations taking place.

Olive oil is obliged to compete with a great number of vegetable and animal fats. In 1934, a quota was established on the importation of oil seeds and seed oils.

The number of olive oil factories amounts to about 650 which are for the most part rather old and have only one mill. During the last few years a large number of modern plants have been installed furnished with two or three mills and hydraulic presses. The district of Ayvalik has 22 mills with modern installations and having a considerable capacity for production.

There are 6 factories for extracting residues oils. Three of them are situated at Smyrna and the others at Kus-Adasi, Bayindir and Gumuslu. The annual quantity of residue oils obtained in these factories is about 3 000 000 kilogrammes, the greater part of which is absorbed by the 50 soap factories existing in the country.

The methods employed for extracting the oil range from the most primitive to the most modern. In almost all the oil factories three compressions are carried out.

The Ministry of Agriculture decided recently to establish a olive-growing Station for the study of the best methods of cultivation, and the extraction and preservation of the oil. This Ministry is also engaged in encouraging the foundation of co-operative societies of olive-growers in the principal regions of production.

Internal consumption of olive oil is estimated at about 80 000 quintals per annum. In Eastern Anatolia and in the table-lands the consumption of sesame and poppy seed oils, etc., is greater than that of olive oil. This is due to a lack of means of transport and the difficulties encountered in transportation. In 1934, the condition of the olive oil market was rather critical as Italy and France had brought into force the "clearing" system with Turkey. Following these measures Turkish exporters abstained from selling their oil to these two countries and it resulted in the principal markets being, in 1934, England, the United States, Egypt and Palestine.

The average annual exportation amounts to about 125 000 quintals. The prices quoted for olive oil in Turkey are better than those of other countries entering into competition with her. The stocks of oil of the preceding seasons are exhausted.

The prospects for olive-growing in Turkey are most favorable as the internal consumption of olive oils is insignificant (a little more than $\frac{1}{2}$ kilo per capita per annum). Thanks to the measures taken by the Government for increasing this branch of cultivation the production of olives will be greater in future years and it is certain that, with prudent measures for the defence of olive-growing, the internal market could absorb without difficulty three times the present production of olive oil.

ANGEL PASCUAL.

CULTIVATION OF *ALEURITES*, WOOD-OIL TREES

I. — GENERAL.

Wood-oils are extracted from the fruits of certain *Aleurites* and not from the wood, as the name by which they are generally known seems to indicate.

(I) HISTORY.

In the fifth volume of *Amoenitates Exoticae* by ENGLEBERT KAEMPFER published in 1712, will be found mentioned for the first time, among other plants commonly found in Japan and more or less exactly illustrated and described, an *Aleurites* to which the author gave the name of "abrasin".

The Swedish botanist, THUMBERG, continued the work outlined by KAEMPFER and gave the scientific name of *Dryandra cordata* to the abrasin.

Some years later, R. BROWN (1821) restored the old name of *Aleurites*, and called KAEMPFER's plant *Aleurites cordata*. This name has been retained though, as often happens when a species is little known, the same species was called by different names. It is only by degrees that a specific determination has been arrived at.

In 1906, HEMSLEY separated the Japanese *Aleurites cordata* from *Aleurites Fordii*, but, on the other hand, he confused Brown's *Aleurites cordata* with the *Vernicia montana* described by LOUREIRO in 1790 in his Flora of Cochin China. It was Wilson who, in 1913, noticing the striking differences between the fruits of the abrasin of Japan and those of *Vernicia montana* or ma-yu of the South, gave the name of *Aleurites montana* to the latter of these two species. This nomenclature was accepted and at present, in the *Dryandra* section of the genus *Aleurites*, there exist the following three species:

A. Fordii Hemsl., *A. Montana* (Lour.) Wils. and *A. Cordata* (Thumb.) R. Br.

Among other species of *Aleurites* from which oil is obtained must be mentioned *Aleurites moluccana* (L.) Willd. and *Aleurites trisperma* Blanco.

Of these five species, the first two are the most important and it is with them that the principal cultivation trials are at present being made in various countries.

(2) BOTANICAL CHARACTERS, AREA OF DISTRIBUTION.

(a) *Aleurites Fordii*. — The names by which it is commonly known are: *abura giri* and *san-nen abura giri* in Japan ; and *t'ung yu* in China.

This species is the most generally cultivated and its culture is without doubt the most ancient. It also has the greatest number of varieties. Six are known in China and one in Formosa, displaying more analogies than differences. The two most important varieties are that of Han-Kow and that of Formosa.

The *Aleurites Fordii* is a tree reaching the height of about 10 metres. The trunk is straight, the leaves pubescent, cordiform, margin entire or with 3 to 5 indentations. The leaf-stalk is 10 to 30 cm long and, at its base which is 15 to 30 cm wide, bears two nectaries.

The tree is dioecious or monoecious. The flowers appear before the leaves at the extremities of the branches of the preceding year. There are generally 5 white petals.

The fruit is a globular drupe, pointed where joined to the stalk and at the opposite end. The colour is dark brown and the diameter from 3 to 5 cm. It generally contains 3 seeds, sometimes 4 or 5. It ripens at the end of September or beginning of October.

The seed is ovoid, the integument brown, spotted with grey, slightly wrinkled. The weight when dried in the air is about 2.5 gm.

Aleurites Fordii is found in China from the 25th to the 34th degree of latitude N., also in the whole basin of the Yang Tse up to the Tibetan frontier, in the provinces of Hu-Peh, Szechwan and Yun-nan.

It is represented by other different varieties in Tonkin. The Formosa variety is found almost everywhere in that country. Its distribution is limited only by altitude with a marked predilection for regions between 300 to 500 m.

(b) *Aleurites montana*. — Commonly known as: *aleura giri* and *sen neu abeura giri* in Japanese, as *mu yu* in China and as *trau* in Tonkin.

Aleurites montana greatly resembles *A. Fordii*, but is more regular in form, has a more rapid growth and reaches greater dimensions.

The leaf is cordiform, entire or with 3 or 5 indentations. The stalk is more fleshy than that of *Aleurites Fordii*. The flowers appear on the branches of the same year, after the leaves. They grow in paniced cymes 15 cm long. The petals are white, rather large, marked with pink on the aiglet; 8 stamens in two rows.

The fruit is globular, marked longitudinally with three grooves and covered on the surface with a net-work of wrinkles. The opposite extremity to the stalk is pointed. It is about 4 cm in diameter and when dried in the air weighs 25 gm.

Each fruit contains 3 seeds which, dried in the air, weigh about 3.4 gm. The integument is blackish brown with boss-like protuberances. The albumen is yellowish white and represents an average of 63 % of the total weight of the seed.

Aleurites montana grows from the province of Fu Kien in southern China as far as Tonkin. It is found in the forests of almost all the central part of Indo-China. It is also often planted round the villages, in the native tea gardens.

(c) *Aleurites cordata*. — The common names are *abrasin* in Japan and *to yu* in China. It is a tree with deciduous leaves reaching a height of about 9 m. The bark is brown, fairly light and smooth. The branches are alternate. The leaves are alternate and cordiform.

This species is essentially monoecious though it shows a very decided tendency towards sexual dimorphism. There are male trees which produce hardly any fruit, and female producing a great quantity; in the case of these the inflorescence is much shorter.

The flowers appear in May or at the begining of June on the branches of the same year, they are pink or pale purple and are grouped in conical inflorescences.

The fruit is 2 to 2.5 cm long, slightly flattened, it ripens in October and is dark brown. Generally there are three loculi and dried in the air it weighs 5 gm. The seed weighs about 1 gm. The integument is greyish brown and smooth. The albumen is pale yellow and represents about 64 % of the total weight of the seed.

Aleurites cordata is found in the hot regions of the island of Hondo (Japan). It is chiefly abundant on the western coast, in the San-in-do and the Hokuroku-do. It is also grown on the Pacific coast in the departments of Mie, Sjizyoka and Chiba.

(d) *Aleurites moluccana*. — A beautiful tree reaching the height of 25 metres.

This species is characterised chiefly by an indumentum formed by star-like hairs covering the inflorescences and the young parts of the branches. The leaves are deciduous, large, oval and pointed; they often have 3 to 5 lobes. The flowers are monoecious, arranged in panicles and smaller than in the other species. They appear at the same time as the leaves. The female flowers are few; the male flowers contain 15 to 20 stamens arranged in four rows. The fruit is fleshy, ovoid, about the size of a small apple and contains one or two oil seeds which are convex, about 3 to 4 cm in diameter and surrounded with a thick, hard integument.

This species grows wild in the following districts: North Australia, Queensland, New Caledonia, Amboina, Tahiti, New Zealand, the Sandwich Islands, the Wallis Archipelago, the Marquesas, the Friendly and Society Islands, New Guinea, Java, the Philippines, Indo-China, etc.

(e) *Aleurites trisperma*. — A tree about 10 to 15 m in height. The leaves are stringy, suborbicular or a wide oval. The flowers are monoecious, arranged in large panicles; there are 7 to 10 stamens in two rows. The fruit is subglobose and smooth, 5 to 6 cm in diameter, dehiscence is late. It contains usually 3 seeds with thin shells.

This species is not found to any great extent outside the Philippines where it exists in all the islands and in all districts at a low or medium altitude. It grows wild in the forests and semi-wild round the villages.

(3) CLIMATE.

The climatic requirements of *Aleurites Fordii* and *Aleurites montana* will be particularly studied as these two are the species the cultivation of which has been most encouraged.

A. Fordii and *A. montana*, as has already been said, are deciduous trees, losing all their leaves and going through a period of repose in winter. Their resistance is poor to sharp frosts, early or late, the second species being more sensitive than the first. They prefer very hot, damp climates with abundant rainfall, exceeding 740 mm per annum. *A. montana* seems to require the most rain.

It does not seem, however, that this minimum rainfall should be considered as a sufficient or indispensable condition for assuring a favorable development to the trees. From this view point the annual vegetative repose is of primary importance.

Their relation to climatic conditions in regions where they grow wild and where cultivation has been tried, with or without success, (as will be seen later) will be seen from Table I.

From this Table it will be seen that:—

(1) In countries where the trees are best acclimatised (Florida, Australia, Madagascar), the rains are equal to about a third of those in Central China; in addition there is a marked difference — from 6° to 14° C. — between the average summer temperatures which differ greatly in these countries, and the winter temperatures;

(2) The equatorial countries (Ceylon, Malaya, Java), where the trials have been negative up to the present, have rainfalls much more abundant than those of Central China, but the average temperatures of the seasons differ by hardly 2° C.

In fact, it appears that, according to the tests made up to the present, the climatic conditions essential for the satisfactory development of *Aleurites*, Chinese wood-oils, are as follows:—

- (a) Abundance of rain in the epoch of vegetation;
- (b) Vegetative repose in winter;
- (c) Absence of frost.

II. — CULTIVATION TRIALS IN DIFFERENT COUNTRIES.

In view of the importance of Chinese wood oils in the composition of paints and varnishes, industrialists have tried to overcome the obligation to obtain this product solely from China. Trials have been carried out in various countries chiefly in the British Empire (Australia, New Zealand, New Guinea, Fiji, India, Ceylon, Malaya, the Seychelles, Mauritius, the Union of South

TABLE I. — *Temperatures and annual rainfall in the principal regions where Aleurites are cultivated.*

	Central China (I-chang)	Florida	Indoch. (Langson)	South China (Hong- kong)	Indoch. (Cao-Trail)	Australia (Sydney)	Madaga- scar (Tanna- rivo)	Kenya (Frt. Sm.)	Indoch. (Banca)	Malay States (Singap.)	Ceylon (Colombo)	Java (Buitenzorg)
<i>Temperatures (in °C).</i>												
Coldest quarter	3.6	12.9	14.7	15.7	18.5	12.1	13	14	26.9	25.9	26.2	24.6
2nd Quarter	16.5	19.9	22.2	21.5	25.4	17.3	17.3	16	28.6	27.1	27	25
3rd Quarter	28.5	26.4	27.4	27.3	28.6	21.6	19.2	17.1	27.8	27.2	27.1	24.9
4th Quarter	18.7	16.6	22.6	24	23.9	17.8	17.4	17	27.2	26.6	26.7	25.2
Maximum differences	24.9	13.5	12.7	11.6	10.1	9.5	6.2	3.1	1.7	1.3	9.9	0.6
<i>Rainfall (in mm.)</i>												
Coldest quarter	71	100	100	143	91	111	8	38	204	633	562	1 282
2nd Quarter	301	101	305	143	356	74	68	72	166	522	459	1 208
3rd Quarter	515	146	763	720	440	90	292	74	848	558	632	769
4th Quarter	242	105	270	187	362	134	80	215	997	643	589	1 160
Total annual	1 129	452	1 438	1 663	1 249	409	448	399	2 215	2 356	2 242	4 419

Africa, Kenya, Tanganyika, Nyasaland, Rhodesia, the Anglo-Egyptian Sudan, Nigeria, Sierra Leone, Saint Helena, Cyprus, Palestine, Irak, British Honduras, the Bermudas, the Leeward islands, Jamaica and the other British West Indies, the French Colonies (Indo-China, Madagascar, New Caledonia, Morocco), Netherlands' Indies, the Philippine islands, Hawaii, America (the United States, Argentina, Paraguay, Brazil) and the U. S. S. R. The countries where *Aleurites* grow wild (China and Japan) have also made efforts to improve cultivation and develop exportation.

Before studying separately the processes followed in each country in the cultivation of *Aleurites*, it may be convenient to give some general principles which, according to M. Jean MORTE, should be the basis of their cultivation, particularly for *Aleurites Fordii*.

It appears that the climate is of minimum importance as *Aleurites Fordii* or "aleura giri" is easily acclimatised in all countries from temperate to equatorial regions. It, however, suffers from cold when young and needs to be protected during the two years that follow transplantation. Heat is only harmful when followed by drought which retards the growth of the tree and diminishes fructification. A rainy climate (with a rainfall of over 700 mm.) is quite suitable, provided that the fall is not excessive as the period of florescence.

Wind is injurious as it may uproot or break the tree and also cause the flowers to fall at the moment of florescence. It also has a prejudicial effect as bringing about dessication.

The soil should be porous though humid. The tree is injured by stagnant water such as is found in clay soils. A certain quantity of humus is required, and the tree is avid of silica.

The land should be selected on the lines indicated above, preference being given to a forest clearing, as the other trees act as a wind screen, and the dead leaves give the humus necessary for the development of the young plants.

Two methods of making a plantation may be used: (a) direct sowing; (b) sowing in a nursery followed by transplantation.

The second method is naturally the best, as thereby the strongest plants may be chosen for transplantation. The nursery should be situated as near as possible to the place selected for plantation in order to avoid unnecessary expense for transport and also a change in the soil when the seedlings are transplanted.

The seeds are sown as soon as possible after the fruit has fallen to avoid loss of germinal power, generally in the spring of the year following the harvest. Sowing is done in furrows 30×10 cm apart. Germination takes 7 to 8 weeks to be completed. The tree is transplanted at the age of one year when it measures from 1.5 to 2 m.

The soil is prepared in the ordinary way, tilled and mellowed. Planting takes place at the beginning of spring before the buds appear.

Spacing should be arranged so as that the branches barely touch each other when the trees are full grown. Taking into account that 10 year old trees can cover 40 square metres, it is easy to calculate the average distance of 5 m. for trees planted in squares. Naturally this spacing must vary with the fertility of the soil.

It is advisable to prune the trees to clear the lower part of the trunk and assist the development of the lateral branches and to give the trees such a form as will make them more resistant to wind.

Irrigation should be carried out only if the season is particularly dry. Little manure is used, though it is advisable to follow American manuring methods.

Fruit can be gathered on a commercial scale at the end of 5 or 6 years. The fallen fruit only is collected and, as this is a long and tedious process, it is the most important factor in the cost price of the seed.

Three processes may be used for removing the pulp of the fruit as follows:— (1) the fruit is piled in heaps, watered and left to ferment; the covering of the fruit is then easily detached; (2) the fruit is decorticated by heat or boiling water a process, which is the least satisfactory; (3) the pulp is removed by machinery, this being the most satisfactory process.

The seeds, after being dried in the sun, should be kept in a dry place.

The processes of extraction vary according to the size of the plantation. The best is naturally by hydraulic pressure. The operation is performed as follows:— The seeds are ground and then subjected to the action of steam for a certain time, e. g., about 5 minutes. This is very important as, if the degree of heating is insufficient, the quantity of oil extracted diminishes and, on the other hand, if the heat is excessive, the oil obtained is brown and of poor quality. Afterwards the seeds are placed in the hydraulic press. The oil is purified by decantation.

(I) JAPAN.

In Japan *Aleurites Fordii* and *Aleurites cordata* are cultivated.

Aleurites Fordii, or «aleura giri» has only been grown in Formosa for a comparatively short time. Up to the beginning of this century, it grew more or less wild, but not absolutely uncultivated though no particular care was taken. The increasing demands of the wood oil industry have given a new fillip to *Aleurites* cultivation, though the efforts so far made are on a small scale and can only be regarded as in the nature of trials. It does not appear that there is a great future for this native species. The tree, in fact, develops slowly and is never of great size.

In the climate of Formosa, *A. Fordii* flowers in March and therefore the coastal regions, particularly rainy at this period are unsuitable. In Formosa direct sowing is practiced, the trees therefore grow badly and give little fruit. In addition, on account of the climate, weeds grow abundantly and choke the young plants.

The usual spacing is 5 × 5 m. The trees are pruned three times a year until they are 5 or 6 years old. Irrigation is only necessary in particularly dry years.

The trees bear fruit from 3 years old. Regular gathering begins when the trees are about 5 years old.

The most primitive methods of extraction are used and only 16 % of oil is obtained.

Aleurites cordata is of far greater importance for Japan than *A. Fordii*. It is grown on the mountains of the temperate regions of the Japanese islands. Cultivation differs naturally according to districts. The departments of Fukui, Shimane and Chiba will be taken as examples of cultivation.

In the department of Fukui (Hokuroku-do) abrasin is relegated to land which is least suitable for growing food crops. Generally the slopes of hills are chosen. Seeds are sown in nurseries and afterwards transplanted during the course of the second year.

The seeds are gathered towards the end of October from trees 20 to 30 years old which are called *shimogi*. Care is taken to choose fruits of regular shape and trispermous. They are dried without decortication.

Sowing takes place in the spring following the harvest. The seeds are separated from the pulp just before sowing and are soaked in water to remove the light seeds which float to the surface. A 90 % proportion of germination is obtained.

The nursery is situated in a place sheltered from the wind on a suitably humid soil and near the land where the seedlings will finally be transplanted. The requisite conditions are generally found in a forest clearing.

The seeds are sown in April and germination takes place in June. In the first year much weeding is necessary and the roots of the young plants must be protected against the winter cold by a covering of dead leaves.

Pricking out takes place when the young plants have reached 1 m. in height. They are planted in rows 1 m. apart, each row being 1.1 m from the next. The final transplantation is made at the end of one or two years. The trees are generally planted 3 to 5 m apart and, according to the quality of the soil, so the density of the plantations can vary from 500 to 1000 trees per hectare.

As the male trees bear little fruit, they are eliminated as soon as it is possible to recognise them. Without relying on the popular belief that male trees are produced by tetraspermous fruits, they can be recognised fairly accurately by their growth which is more vigorous and rapid than that of the females. In practice straw mats are placed in the ground horizontally and at a certain depth, and, at the time of transplanting the plants whose roots have reached and penetrated the mats are eliminated. After the final transplanting, when the trees show too much growth a certain number are cut down, naturally choosing the males for preference.

Little or no manuring is given.

The trees bear 7 or 8 years after planting, the maximum yield being attained between 15 to 30 years old. In October the ripe fruits are left on the trees and collected when dessication has begun. The pulp is separated from the seeds by pounding in a mortar or by washing with water.

The trees are kept until they are 50 years old.

The oil is extracted by means either of conical or hydraulic presses.

The seeds are first dried in special chambers which have no windows, the walls being of wood and earth. The seeds are arranged on a hurdle consisting

of parallel iron bars and placed at a certain height. The chamber is heated up to 120° C and the operation lasts 24 hours. At the end of this time the seeds should be in a state to be ground, but the quality of the oil should not be altered. The grinders consist of three rollers superimposed, 25 cm in diameter by 60 cm long. A sufficiently fine powder must be obtained to permit the extraction of all the oil without being so fine as to prevent the passage of steam. The application of steam lasts about 5 minutes and is followed immediately by compression.

In the department of Shimane plantations are made for preference on the mountain slopes of valleys facing north so as to avoid damage by the prevailing wind, and on permeable soil. In this district, which is covered with forests of *A. cordata*, only the trees in poor condition are replaced and frequently all that is done is to put a wild plant in the place of the tree cut down.

If, however, a larger area has to be renewed, fully mature seeds are chosen from a very productive mother tree and from tetraspermous fruits. Sowing takes place in April in sheltered land in order to avoid drought and frost. The seed is sown in rows which are then covered with rice straw. Germination takes place at the end of a month and a 90 % germination can be obtained.

Transplantation is performed at the end of the third year in April and generally in a clearing where the forest is to be renewed. The young plants are grouped in threes, 1 m. apart. The strongest are retained taking care to choose the females.

Cultivation is limited to applications of manure in the autumn and spring following sowing, and to weeding, and summer lopping during the first 7 or 8 years. When the trees come into bearing, the soil is weeded from the end of August to facilitate the collection of the fruit.

The fruit ripens during the month of October and is collected as it falls. It is afterwards put in a ditch and covered with straw matting and left to ferment; it is then pounded in a mortar and the seeds are separated and dried in the air.

The methods of extraction are the same as in the department of Fukui.

In the department of Chiba, *A. cordata* is cultivated on land composed of tertiary lava which is not very fertile. Sloping ground is chosen, avoiding a South-East exposure, the quarter from which comes the prevailing wind.

In this region there are two varieties, one early and the other late; these are merely the male and female plants. The first flower 8 to 10 days before the second and bear very little fruit. The late trees on the other hand, bear abundantly and are naturally cultivated in preference to the others. They are distinguished from each other as the first have a long fruit stalk and deeply dentated leaves and the second have short fruit stalks and round entire leaves.

The seeds are sown in nurseries where the young plants are kept for a year. They are transplanted during the course of the second year. In a full grown plantation a spacing of 6 metres in all directions is observed.

No special care is given; only the branches at the base of the trunk are removed and also those on the full grown trees which hinder the collection of the fruit.

In this department the methods of extraction are the most primitive of all. The seeds are ground in a stone mortar, the pestle being worked by the foot; they are then submitted to the action of steam and pressed in a sack under a flat stone held in place by a wooden beam. The oil is collected in a vat where it clarifies; it is then decanted and the deposit, mixed with other seeds, passes again through the press.

(2) CHINA.

In China *Aleurites Fordii* and *Aleurites montana* are chiefly cultivated. *A. Fordii* is found all over China in the whole basin of the Yang-Tsze as far as the Tibetan frontier, also in the provinces of Hu-Peh, Szechwan and Yun-nan. It is partly wild and partly cultivated. The Chinese differentiate several cultivated varieties though their names are applied differently in the various provinces. These varieties are as follows:— (a) the “Ten-Thousand Year Tung”, (b) the “Early Year Tung”, (c) the “Five Clawed Tung”.

The trees belonging to the first variety come into bearing at the normal age of 3 years; they are long lived and their fruit contains large seeds. The second variety is early, i. e., they bear fruit at an early age. The trees of the third variety have lobed leaves; this characteristic is probably not permanent and is only found on the young trees. It must be emphasised that the names of the varieties are not in general use and there appears to be no special rule for their application.

Aleurites montana is chiefly found in the southern part of China, from the province of Fu Kien as far as Tonkin. It is far from having the importance in southern China that *A. Fordii* has in the north. In fact it provides only 10 % of the production in China.

The plantations of *Aleurites* in China are not managed either by private persons or by companies; they are usually of small extent, near the villages or in the forests where the trees grow wild.

At the present time the trees are not cultivated in a systematic manner, they are found generally on mountain slopes or among the rocks on poor soil which is useless for food crops. As however the Chinese Government realised that the exports of wood oils constituted a valuable source of revenue and desired moreover to remedy the deforestation, the authorities of the Kwang Si, in 1929, required each family to plant 300 trees either on the hills denuded of trees or on fallow lands. This measure, however, does not appear to have a great effect on the total production in China, as the trees thus planted only replace those which for some reason die off. Nor have good results been obtained as regards afforestation on account of the absence of general supervision.

For establishing plantations the seeds are sown directly on the spot instead of in nurseries, in manured soil, either after gathering or in the following spring. They are sown singly or in pairs, so that only the strongest plants may be retained. The depth of planting is 10 cm and sometimes another crop is sown above (generally a cereal) to act as a cover and to prevent dessication of the soil.

When the seed is sown in good ground the Chinese give some attention to their plantations so as to improve the yields. Farm manure, wood ash and tung oil cake are commonly used as manures.

The trees begin to bear at 3 to 6 years according to the attention they have received and the fertility of the soil. The maximum production is reached at about the tenth year. The trees give a remunerative yield up to the age of 25 to 30 years. In Che kiang, a district in southern China where cultivation is most thorough, the trees are retained for a shorter space of time, and are cut down when about 10 to 12 years old and sold as fire wood.

On account of the dimensions of the trees when full grown they are planted in China at 6m × 6m apart.

The fruit is gathered on the trees a little before complete maturity and piled in heaps and left to ferment so as to disintegrate the outer coats. To accelerate fermentation the heaps are covered with dead leaves. This is a bad method as fermentation injures the quality of the oil and favours the action of enzymes contained in the seeds.

The seeds are dried, first in the sun and then by fire. The oil is extracted by small factories which use the most primitive material. The seeds are ground under a stone roller, one end being attached to the centre of a stone disk with raised edges and measuring about 2 metres in diameter. The debris of integument is removed from the meal thus obtained which is then heated either with dry heat or steam for 30 to 40 minutes. When the meal has become brown it is pressed generally in rudimentary presses of wood, pressure being obtained by blocks driven in with a mallet. In the larger undertakings hydraulic presses are used.

The cold pressed oil of *A. montana* is bluish white and is called white or golden oil. Hot pressed it is pale yellow. It hardens at low temperature and resembles butter. This is the oil that is exported. When the seeds are heated until they become blackish brown the colour of the oil is darker. This is called black or old oil and is hardly used at all outside the country.

The Chinese obtain a third kind of oil by heating the oil obtained with oxide of lead and iron oxide at the rate of 50 grammes of each of these to 1 kg of oil. The oil obtained is very dark and drying and is called by the Chinese *Ko yu* or sparkling oil.

The oil for export passes through the hands of several intermediaries before being delivered to the exporters of Hankow. It is transported on the Yang-Tse-Kiang and is subject to the risks entailed due to insecurity, the hazards of navigation and the arbitrary taxes imposed by the mandarins. The oil which arrives at the port has frequently been adulterated with cottonseed, soya, tea, ground nut, sesame, poppy seed or colza oils. However, since 1928, the Chinese Government has established a Bureau for standardising wood oils and only the oils corresponding to established specifications are permitted to be exported. Bureaux of this kind have been opened at Shanghai, Hankow and Wan-hsien and this step has been followed by a decided improvement in the quality and purity of the oil for export.

The oil delivered by the suppliers is graded on receipt according to commercial standards. It is conserved in sheet iron tanks, capacity 10 to 20 tons, where it clarifies by decantation.

These tanks are supplied with a circular system of heating to prevent the oil freezing in winter. Heating up to 70° C is necessary at all times to obtain a perfectly limpid and clear oil.

The oil exported to Europe is generally packed in wooden casks probably of oak, treated with steam and then with sodium silicate and containing an average of 180 kg of oil. Steamers equipped with tanks are also used especially for transporting shipments to America. The cost of packing, always high, is thus avoided and a decided reduction in freights is obtained.

No exact information is obtainable on the yield of *Aleurites* in China, it may, however, be said that each tree, according to its age and the fertility of the soil, can give from 14 to 70 kilos of fruit, that is, admitting that the seeds contain about a third of their weight in oil, 3.5 to 6 kg of oil per annum. No recent information is available on the profit the Chinese cultivators can obtain from their plantations of *Aleurites*.

Aleurites in China are not attacked by any serious disease or pest.

(3) THE FRENCH COLONIES.

In the colonies, protectorates and mandated territories of France there are many parts where climatic conditions and soil are favorable to the growing of *Aleurites*, though these regions are not suitable unless labour is abundant.

In all cases the success of such plantations is subject to the co-ordination of the work of the planters and the consumers in France, and the production of good *Aleurites* oils in the French Colonies needs much collaboration. In each producing centre, a organisation for forestry research should instruct planters and provide them with selected seed, and capitalists should finance the establishment of plantations, oil factories and means of economical transport.

The various Governments of the French colonies have well understood the situation and, since 1931, systematic trials have been commenced in all the districts that appear to be most adapted to the cultivation of *Aleurites*.

The following is a summary of the investigations made up to date.

(A) Indo-China.

Indo-China, and particularly Tonkin, is the colony considered the most adapted from all points of view for the growing of *Aleurites* on account of its vicinity to China. The majority of *Aleurites* there grow wild or semi-wild, that is, they grow without any special attention. In addition, there is not another part of the world, except China and Japan, where labour is so cheap as in certain regions of Tonkin which are at the same time most suitable for the cultivation of *Aleurites*.

Of the five species of the genus *Aleurites*, three are found in Indo-China, namely:—

(a) *Aleurites Fordii*. — This species is rather rare in Indo-China. It is only found in some places in the districts of Kaobang, Langson, Thai-Nguyen; Hoa-Binh in Tonkin and in the province of Than-Hoa (North Annam). In fact the north of the Indo-Chinese peninsula is at the southern limit of distribution of this species.

(b) *Aleurites montana*. — This species, on the other hand, is very common and much cultivated in the northern half of the peninsula; Tonkin, Annam, above Tourane. It is found in the forests of the regions in almost all Indo-China. It is also often planted round the villages as a shade tree for the tea and coffee plantations. It is sometimes the principal tree in the secondary forests in North Annam where development has been favoured by the destruction of other trees. It has been introduced into Cochin-China and Cambodia.

The seeds collected from the wild trees or those grown as shade trees are treated in the numberless small native oil factories which are scattered about the regions of production.

The total production of abrasin seeds is about 1500 tons. In the provinces of Than-Hoa, Nghe An and Hatinh production is highest; about 1000 tons.

Oil is extracted by the most primitive methods and the yield in oil is about 20 % of the weight of the seeds. It is almost entirely consumed locally.

(c) *Aleurites moluccana*. — This species is most common in Cochin China and is also found here and there in Cambodia, Annam, Tonkin and up to the Chinese frontier. It apparently does not grow wild as it is found only round the villages, on the edge of fields and sometimes in secondary forests.

A. Moluccana is used as a shade tree and for avenues on account of its beauty. The seeds are only rarely collected by the natives. In the central region of Tonkin, however, they are collected and treated mixed with the seeds of *A. montana*.

For some time the Indo-Chinese planters have been establishing plantations of *Aleurites* and at many places tests have been made in the cultivation of *A. montana*. The Agricultural Services have also carried out researches at the experiment stations of Tuyen Quang and Phu-Ho. Since 1932 the necessary studies and investigations have been directed by the Institute of Agricultural Research of Indo-China.

According to M. OUDOT, the following are the researches that have been made and the results obtained:—

The first attempts by planters have always failed and yields were too small to be remunerative for the capital employed. The smallness of the yields were due to the low average productivity of the seeds and to defective conditions of cultivation.

The Agricultural Services of Tonkin (in 1925) undertook researches in the experimental stations of Tuyen Quang and Phu-Ho with the following results.

The plants of *Aleurites montana* from ordinary seed show considerable differences in production; the average productivity is small. These differences result from the relative disproportion of the male and female flowers. In 1929 and 1930, the male and female flowers on 599 trees at the Station of Tuyen Quang were counted. The result will be seen from Table II.

TABLE II. — *Classification of trees per percentage of female flowers.*

Per cent. of female flowers	Percentage of trees in each category	
	1929	1930
0	29.5	22.8
0 à 5	15.8	22.0
5 à 15	4.8	5.5
15 à 25	3.8	3.7
25 à 40	2.8	2.5
40 à 60	4.8	3.8
60 à 75	2.5	3.3
75 à 85	2.8	2.2
85 à 95	3.5	4.2
95 à 100	9.7	14.3
100	20.0	15.7

It will be seen from this Table that one fourth of the trees, having no female flowers, could not bear fruit.

Similar results were obtained at the experiment station of Phu-Ho from tests made from 1925 to 1930.

On account of the poorness of the soil the plantations at Phu-Ho were destroyed in 1931.

At Tuyen Quang, the soil being richer, the trees were preserved and certain of them gave satisfactory results. In 1929 and 1930 the following yields were obtained from 50 trees selected from among the 599 mentioned previously.

The maximum individual yield amounted to 26 kg 600.

TABLE III. — *Average production of 50 selected trees at the station of Tuyen-Quang.*

	Dry Fruits			Seeds dried in 1930	
	1929	1930	Average	Weight	%
Production	1 410.0	1 075.0	1 242.8	475 kg.	46
Average per tree	28.2	21.5	24.85	9.9 kg.	—

These first tests showed that systematic planting of *A. montana* could be carried out in fertile soil only and from selected material.

In spite of the small importance of *A. Fordii* in Indo-China, some tests were made in its cultivation at the experiment station of Phu-Ho. Even worse results were obtained than with *A. montana* and the yields were extremely low. These tests showed that the efforts made to introduce this species of *Aleurites* into Indo-China should be chiefly directed towards discovering the regions most suitable for its growth. In Indo-China possibilities in this respect are very uncertain.

As has already been said, the Institute of Agricultural Research of Indo-China undertook research work on *Aleurites* in 1932. Its programme included the study of various varieties of the two species *A. Fordii* and *A. montana*, the determination of the possible regions of cultivation and the production of good quality planting material. This programme is now in course of execution. Comparative tests are being made on the behaviour of *Aleurites Fordii* introduced into China, the United States and Madagascar. Almost all these tests have been made in North Annam and Tonkin.

At the same time a certain number of planters or societies of planters wished to discover if the cultivation of *A. montana* could be attempted in South Indo-China and undertook tests on the basaltic table-lands of South Annam and Cochin-China.

The Institute of Agricultural Research has also tried to obtain high yielding clones and selected seeds.

M. OUDOT concludes from these investigations that only the methodical cultivation of *A. Fordii* and *A. montana* will permit Indo-China to produce and export large quantities of wood oils; that the possibilities of cultivating *A. Fordii* in Indo-China are uncertain, but as, on the other hand, the work recently carried out by the *Office National des Recherches et Inventions de Bellevue* (Seine-et-Oise) has definitely proved that the abrasin oil of Indo-China, pure and well prepared, has the same properties and possibilities for use as Chinese commercial wood oil, Indo-China may undertake the production of wood oil consisting solely of oil of *Aleurites montana*. In any case the systematic establishment of plantations of *Aleurites* cannot be contemplated apart from the use of high class planting material.

The opinion of M. Auguste CHEVALIER should also be noted here on the possibilities of cultivating *Aleurites* in Indo-China. He is convinced that plantations of *Aleurites* in Indo-China undertaken by Europeans will not cover their expenses, although suitable land is not lacking and labour in Tonkin is very cheap. He adds that gathering and breaking the nuts takes much time and that the needy peasants of Annam only undertake gathering the seeds of wood oil trees when they have no other occupations. In his opinion the problem would perhaps be changed if, by selection and budding, *Aleurites* could be obtained giving high yields every year. He calls attention to one of the aspects of the problem which has not yet been studied, that is the use of *Aleurites* for afforestation by simple methods of forestry cultivation.

In the re-established forests of Tonkin *Aleurites* could be associated with camphors, and various species of trees with oil bearing seeds which are already grown in the forest stands. Plantation could be carried out at the present time by the numerous unemployed in Tonkin who have been dismissed from the plantations of Heveas in Indo-China during the last few years. The right to gather the fruit would belong to the dwellers on the borders of the forest, on payment of a charge.

No accurate information exists at present on the diseases and pests of *Aleurites* which are of greatest importance in Indo-China.

(B) New Caledonia.

The question of cultivating *Aleurites* in New Caledonia has been studied since 1931.

Aleurites moluccana grows wild in this island and it is not impossible that *A. Fordii* or *A. montana* might be acclimatised in such a way as to render their cultivation profitable.

For this purpose, the Chamber of Agriculture of Noumea has procured seeds of *A. Fordii* and *A. montana* and put them at the disposal of growers in New Caledonia. This seed was distributed to planters of Gomen Sarramea, Plum, Kone, Noumea, the Bay of Ue and the Isle of Pines at the beginning of 1933. According to the latest information the following results have been obtained:—

Aleurites seed sown in the district of Gomen on the slopes of the hills have germinated very well.

At Sarramea, with 190 seeds 50 plants have been obtained, showing two leaves, which are being constantly planted out. Some seeds are still germinating. It has been noticed that rats are very partial to the seed leaves.

In the district of Plum about 30 seeds of *A. Fordii* were sown in a nursery in 1931. About 20 plants were obtained, some of which have now reached the height of a man. The planter has observed that the plants which have remained in the nursery are much better grown than those transplanted and he deduces that in sandy land where the soil binds with difficulty, it is far better to sow the seed direct. In 1933 he followed this system with seeds of *A. Fordii* and *A. montana* distributed by the Chamber of Agriculture and sowed them at 3.5 m × 3.5 m. Germination was good and, at the end of 1933, the plants were already 15 cm in height and had 6 to 12 leaves, although *A. montana* seemed to be the more vigorous.

In the district of Noumea, where the climate, however, is not suitable for *Aleurites*, a good, but very irregular, germination was obtained of seeds of *A. Fordii* and *A. montana*. The growth of *A. montana* was the stronger. In the course of these tests, made in 1931, it was also found that *Aleurites* made better growth if not transplanted. It would appear that this operation rendered them more sensitive to attacks by galls and aphids. Finally, the trials have shown that *Aleurites* from imported seed are much less resistant to drought than the wild "bancouliers" (*A. moluccana*). *A. Fordii* and *A. montana* have

been budded on *A. moluccana* with a view to obtaining trees more resistant to local conditions. The trials made in the Isle of Pines did not succeed.

In the Bay of Ué, in new soil containing iron and many other minerals, excellent results have been obtained with *A. Fordii* which in two years reached the height of 2 or 3 metres with 3 or 5 branches and enormous leaves. Although these tests are too recent for definite conclusions to be drawn, it appears that the production of a hybrid may be recommended and that *A. Fordii* and, above all, *A. Montana* would give good results chiefly in the forests in high altitudes, but well exposed and that the Sarramea region is too cold though suitably humid and although the "bancoulier" grows there in abundance.

(C) Morocco (I).

Since 1926, trials have been made with a view to acclimatising the various species in the Jardin d'Essais of Rabat, chiefly with *A. Fordii*, *A. montana*, *A. moluccana* and *A. cordata*.

In the first year *A. Fordii* and *A. moluccana* attained the height of 1 m. to 1.50 m. trials made in 1928-1929 also gave good results. The plants were transplanted in March, 1930, and the first flowering of *A. Fordii* was observed in April, 1932, while *A. moluccana* developed more slowly, that is, not flowering until August-September, 1933.

Tests with *A. montana* and *A. moluccana* were continued in 1932 and were successful, as also with *A. cordata* in 1933.

At the same time, seeds of *A. Fordii*, imported each year from the United States or China, furnished numerous plants (about 3000 per annum) which were distributed in the various districts of Morocco. Observations on the acclimatisation of the various species of *Aleurites* are as follows:—

(a) *A. Fordii*. — At Rabat the seeds sprouted 35 to 50 days after sowing (March, 1929); as a result good and vigorous plants were obtained which reached the height of 50 to 60 cm. a year later and were transplanted in the following spring. The plants immediately took hold and the growth, aided by watering in July and August, was luxuriant.

In the month of April of the following years one of the plants was seen to flower, the fructification was normal, 18 fruits being obtained containing 3, 4 or 5 perfectly formed seeds.

Gathering began on 15 October at the time when the fruit turned from green to pale yellow and the fruit stalk was easily detached from the seed. The fruit was exposed to the air, out of the sun, for about 10 days in order to dry completely and to preserve the germinal power of the seeds which were sown in the following spring.

(1) Based on a report sent by the Chief of the Agricultural Service of Morocco.

An idea of the dimensions of the trees at the end of a year after planting will be found in Table IV, which applies to 5 plants.

TABLE IV. — *Development of Aleurites Fordii at Rabat at the end of the first year of planting.*

Serial number	Circumference of trunk 0.50 m. from the ground	Height
1	10 cm	2.55 m
2	12 "	2.74 "
3	16 "	3.25 "
4	15 "	3.42 "
5	8 "	1.20 "

The following year the vegetative behaviour was identical with that of the previous years, flowering was general and the fruit gathered presented the following characteristics:—

	Fruit	Seeds	Nuts
Average length	52 mm	25.6 mm	23 mm
Average breadth	49 "	20.5 "	17 "
Bulk	—	14.2 "	13.5 "

The average weight of the fruit was 31.8 gm and that of the envelope 14 gm. The weight of 100 seeds was 255 gm and that of 100 nuts, 214 gm.

This shows that the fruits obtained in Morocco are comparable to those obtained in America.

Parallel to these trials, the multiplication of *A. Fordii* was undertaken in 1929 with a view to acclimatising it in the various districts of Morocco; 18 kg of seeds of American origin were used. A second lot was sown the following year.

Sowing took place on 28 February, 1930 at intervals of 0.20 m, and 5 cm in depth. The soil was light, siliceous, with a clay sub-soil. The seeds were planted 0.15 m apart and covered with a light covering of earth to avoid hardening of the superficial layer. The young plants obtained were sent to the Experiment Stations of Fez, Meknes, Rabat and Marrakech, also to 32 planters in the principal districts of the country.

In 1932, sowing again took place with seeds from the plantations of Fairhope (Alabama) and Gainesville (Florida) and from China.

Germination of all these lots was excellent.

The type of cultivation consisted in ploughing and frequent weeding alternated with slight irrigation.

At the end of a certain time a difference could be seen between the plants from Chinese seed and those from Florida.

These differences are shown in Table V.

TABLE V. — *Influence of the origin of seeds of Aleurites Fordii on the growth characters.*

Origin	Leaves		Length of leaf stalk cm.	Height of stalk		Circumference of stalk (at 30 cm. of soil) cm.	Colour of leaves
	Width cm.	Length cm.		Average m.	Maximum m.		
China . . .	26	20 to 23	22 to 23	1.20	1.50	4.5 to 6	Dark green
Florida . .	22	20 to 21	22 to 23	1.00	1.35 to 1.40	3.5 to 4	Beginning of yellowing

In February, 1933, 4,000 plants were distributed between 58 official stations and private plantations.

In 1934, American and Chinese seeds were again imported with a view to further distribution.

Each year tours of inspection were made to supervise the trials carried out by the planters. The results of these enquiries have shown, as is the case in all attempts to popularise new forms of cultivation, that there was a large percentage of failures in the private plantations. The principal causes of failure were due chiefly to the duration of transport of the trees, defective and insufficient cultivation and supervision, lack of ploughing or irrigation, damage by domestic animals, etc. Sometimes it was also due to the nature of the soil: excess of lime, chiefly in the sub-soil, of density and alkalinity, too much or insufficient humidity, etc. or to meteorological causes (sirocco, insolation), which brought about drying and blackening of the leaves, and ultimately the death of the trees. Certain planters preferred to leave their plants in the nursery during the first year so that they should receive greater attention.

In various places the growth of the trees in height was often almost nil during the first year and it is to be supposed that this apparent stagnation was due to a greater development in the root system.

Cutting back at the time of planting, advised by American planters, has proved to be undesirable, or at least useless in the majority of stations, where it was applied. To sum up, the greatest drawbacks to cultivating *A. Fordii* in Morocco seem to be prolonged and excessive droughts and high winds.

The numerous observations made in 1931, 1932 and 1933 have however, shown that there are certain districts where *A. Fordii* might succeed, but it would be premature to restrict its cultivation to these districts and new trials should show more precisely the area adapted to this species.

(b) *Aleurites montana*. — The first sowings of *Aleurites montana* took place in the « Jardin d'Essais » of Rabat in April, 1926 and again in 1927 and

were not successful. In 1931 good Indo-Chinese seeds were finally obtained from the Experiment Station of Thuyen-Quang. They were sown in March 1932 in the same conditions as, and in a plot close to, *Aleurites Fordii*. Sprouting took place slowly and very irregularly; the first seedling appeared towards the 32nd day and the last took from 95 to 100 days to appear above ground.

The development was poor; the plants suffered from etiolation and were for the most part damaged by various insects. By the end of the autumn the average height of the plants was about 37.5 cm.

In the spring of 1933, however, the best of the plants were distributed between the « Jardin d'Essais » of Meknès and a farm in the neighbourhood of Tiflet where the previous tests with *A. Fordii* has succeeded perfectly. The plants took hold well and development was vigorous which shows the possibility of acclimatising this species in certain regions of Morocco. In the course of these tests it was remarked that, contrary to observations made in the country of origin, where the very rainy districts seem to be most favourable to *A. montana* (1,500 mm. per annum and more), the trees planted at Tiflet where the rainfall is very low (about 500 mm) and there were only three slight irrigations in the course of the summer of 1933, behaved admirably.

(c) *Aleurites moluccana*, was tried out in Morocco on the lines of possible hybridisation and budding.

The first tests were carried out in 1926 and 1927 with seeds from the United States. The plants obtained in 1927 were transplanted the following year to the « Jardin d'Essais » of Rabat. These trees seem to have grown well and in 1933 had already reached the following dimensions:—

Average height 4.5 m to 5 m;

Circumference of the trunk 0.37 m to 0.47 m (at 30 cm. from the collar);

Length of the leaves: 21 to 24.5 cm;

Width of the leaves: 26 to 29 cm;

Length of the leaf stalks: 20 to 25 cm.

It must be noted that though these trees belong to an ever-green species they lose the greater part of their leaves in January and February without being entirely denuded.

A tree four years old flowered abundantly, but although the flowers set well, the heat was insufficient to assure fructification.

(d) *Aleurites cordata*. — The first trials was made in 1926 at the « Jardin d'Essais » of Rabat, without results, on account of the bad quality of the seed received. Another test was made in 1934 with seeds imported direct from Japan and Asiatic Russia. Information is not yet available on the results of these trials.

(e) *Aleurites trisperma*. — No experiments have yet been made in acclimatising *A. trisperma* in Morocco.

(D) Madagascar.

Aleurites Fordii was introduced into Madagascar by the Prime Minister as an ornamental tree before colonisation by the French. Some specimens still exist in the gardens of the Queen, the Prime Minister and certain private persons.

Afterwards M. PERRIER de la BATHIE was able to identify the stands of wild *Aleurites* of Madagascar of Imerina, known by the native name of *bakoly*, as *Aleurites Fordii*. His report is as follows: "this tree, in which no one is interested, is gradually disappearing though its fructification is very abundant and its vegetation perfect. Its cultivation would present no difficulties in the centre, and in a region so deplorably sterile it flourishes surprisingly".

In Madagascar *A. Fordii* is a beautiful tree which loses its leaves in May and flowers in September. The vegetative repose is complete for about four months.

The flowers show the following peculiarities: there is only a single female flower at the extremity of the floral stalk, the male flowers are below.

The fruit is about the size of a small apple and generally contains 5 seeds.

It would be difficult to establish true plantations of *A. Fordii* in Madagascar as all the land suitable for cultivation is required for food crops while the soil that remains is so lateritic that it would perhaps be unsuitable for these trees although, as M. PERRIER de la BATHIE remarked, *A. Fordii* will grow on very poor land.

At the present time some trials have been made in planting which have resulted in obtaining fruit giving suitable oil.

Aleurites moluccana is found in the neighbourhood of Tamatane and all along the coast fairly abundantly, but in scattered stands. It is very much larger than *A. Fordii* and gives greater quantities of fruit. Unfortunately the shells of the nuts are very hard and special installations are necessary for treating the fruit. At Tamatane there was a small oil factory for extracting the oil of the "bancoulier". This has now disappeared and it does not seem that others will be installed.

To sum up, it may be said that in Madagascar attempts in cultivation are confined exclusively to *Aleurites Fordii* and that the first results obtained augur well for the future.

(E) French Equatorial Africa.

Some plantations have been made in French Equatorial Africa, but as far as can be discovered nothing has yet been published on the results obtained.

(F) Tunisia.

It is not considered possible to acclimatise *Aleurites* in Tunisia as the annual rainfall does not appear to be sufficient (an average of 500 mm at Tunis). The only district where they might be introduced would be Kroumirie, but the winter temperature is unsuitable.

(G) Algeria.

According to climatic conditions (sufficient heat without being too great and ample annual rainfall) it appears that attempts might be made to acclimatise *A. Fordii* in this colony.

(4) THE BRITISH EMPIRE.

In 1917 the Imperial Institute began researches on the cultivation of *Aleurites*, namely, with *A. Fordii* and *A. montana*. Trials were at the same time begun in India and certain other colonies. In general, the results obtained were not conclusive, though, in Kenya, two of the *Aleurites Fordii* fructified and a sample of the product was examined at the Imperial Institute. It was found that the seeds had a normal oil content and that this oil presented the usual characteristics.

The question of cultivating *Aleurites* in the British Empire was again taken up in 1927 by the Advisory Committee for Oils and Oil seeds of the Imperial Institute. This Committee, in collaboration with the Director of the Royal Botanical Gardens at Kew, the Director of the Research Association of British Manufacturers of Colours and Varnish Paints, distributed the seeds from China and Florida in various parts of the Empire.

Having regard to the importance of the question, the Committee formed a special Sub-Committee for its study.

This Sub-Committee continued to encourage the experimental cultivation in the Empire by distributing seeds and publishing all the information likely to be of use. It also undertook researches at the Paints Research Station on problems relative to this cultivation the solution of which would contribute to the success of Empire production.

Trials were made in the following countries: Australia, New Zealand, New Guinea, Fiji, India, Ceylon, Malaya, Nyasaland, Rhodesia, the Anglo-Egyptian Sudan, Nigeria, Sierra-Leone, St. Helena, Cyprus, Palestine, Irak, British Honduras, the Bermudas, the Leeward Islands, Jamaica and other islands of the British West Indies.

Up to the present more experimental work has been carried out with *A. Fordii* than with *A. montana*.

The principal results are as follows:—

(A) India.

The principal trials have been made in Burma and Assam. The plantations in Burma are situated in the Shan States near Taung-gyi. They were undertaken by the Forestry Department and were confined to *Aleurites Fordii*.

The first trials dates back to 1923 when 3 lbs of seed of *A. Fordii* were received from Han-Kow. Nothing is known of the results obtained. At the same time seeds of *A. montana* were received from Hong-Kong which germin-

ated in 45 days. The plants flowered in May 1927, but in 1928 they had not yet borne fruit.

In 1928 tests were again made with *A. Fordii*. The results were very bad as the seeds had suffered during transport and, at the end of 1929, all the plants had disappeared.

From 1929 onwards useful information exists on the cultivation of *A. Fordii*. In this year seeds were received from Kew and Nanking. An average proportion of 75 % germination was obtained.

Seventy-five trees to the acre was adopted for spacing and it was found that the best time for sowing was at the end of the cold period.

Tests were made in direct sowing on the spot which succeeded fairly well and is carried out on a commercial scale at Hsumsai by a private company.

Trials have shown that *A. Fordii* are resistant to transplantation; the tests were made with plants 3 months to 1 year old and even more. It was also found that the best time for transplanting was at the end of July during the rainy season for plants 1 month old, at the end of October for plants 3 months old, and for year-old plants during the rains. The results obtained by transplanting were better than when the seed was sown direct.

From 1930 tests were made in manuring; these were discontinued as very little difference was found between the manured plots and those which were not manured.

Trials were carried out in intercalary cultivation of *A. Fordii*, utilising potatoes, rice and wheat. Wheat is the most suitable as it grows during the repose period of *Aleurites*.

At the end of the first year the plants measured 0.30 m, at the end of the second year 0.50 m., at the end of the third year 1.50 m. and at the end of the fourth year 1.80 m.

Some of the trees planted in 1929 flowered for the first time in 1932 and again in March, 1933. The flowers appeared with the new leaves in March and remained on the trees until the middle of April. The flowers were of the usual type, one female flower per inflorescence.

The fruit ripened in September. Table VI shows the number of fruits gathered in 1933 on the trees planted in 1929.

TABLE VI. — *Fruit yield obtained in plantations of 1929.*

Number of plot	Area in acres	Total number of trees	Number of fruits gathered	Production	
				per tree	per acre
1	3	189	4	0.02	1.3
6	15	840	46	0.055	3
7	6	451	58	0.128	9.6
<i>Total . . .</i>	24	1 480	108	0.073	4.5

Analysis of the fruits gave the following results:—

Pericarp and integument	38.4 %
Seed	61.6 %
Oil content of the seeds	46.5 %

Figures cannot be given for net cost prices.

At present there are no plantations of *A. montana*, at best there are a few plants mixed with *A. Fordii* in the plantations.

To conclude, it may be said that *Aleurites Fordii* can be cultivated with success near Taung-gyi and in certain States of the Southern Division of the Shan States. *A. Fordii* is a resistant plant which is easily transplanted and can stand considerable cold. Transplanting should almost always be carried out in the rainy season. The flowers appear at the beginning of March and the fruit ripens in September. The results are encouraging in spite of the primitive methods of gathering the fruit. Efforts to acclimatise *A. montana* have so far been unsuccessful.

The Department of Agriculture of Burma has also carried trials at Maymyo, Mandalay and the Experiment Station of Hmawbi. At Maymyo germination of seed of *A. Fordii* was good, the plants grew slowly during the first year and then more rapidly in the following years. At Hmawbi a good germination was also obtained and growth was so rapid that the plants could be transplanted at the end of 3 months.

In Assam *A. Fordii* grew well and certain trees began to bear fruit at 18 months old. A certain number of tea planters have established experimental plantations and in some of the plantations started in 1928 the seed is at present being used for new sowings.

Mr. D. S. WITHERS has undertaken comparative tests at Naogaon on *A. Fordii* and *A. montana*. He is inclined to think that this last species will grow better than the other in the majority of regions in Assam which have annual rainfalls of 1300 mm to 2500 mm.

In addition, the Director of the Indian Research Institute for Lac has undertaken tests on a small scale at Sabaya and Namkum in the district of Ranchi (Chota Nagpur) in the province of Bihar and Orissa. The *A. Fordii* have grown well and begun to flower towards the end of the second year.

(B). Ceylon.

Trials with *A. Fordii* have shown that this tree cannot be cultivated on a commercial scale in Ceylon.

Experiments with *A. montana*, on the contrary, indicate that they would be successful in that island. The Director of the Experiment Station of Périadeniya in his report for the first half of 1933 stated that the growth of the plants of *A. montana* in the "Terraced Valley" was extremely variable. Certain trees, the oldest of which had been transplanted at 3 months, grew well and

flowered for the first time; others, however, grew very slowly. He observed a good growth chiefly on the terraces where the soil was cultivated and where the plants were sheltered from the wind. One of the old trees had begun to bear fruit.

(C). M a l a y a .

The Department of Agriculture of the Straits Settlements and the Federated Malay States has made many trials with various species of *Aleurites*. The following information is available on the growth of *A. Fordii* and *A. montana* in Malaya.

The trials have shown that *A. Fordii* develops well in the first year, but its growth is afterwards arrested and the tree bears neither flowers nor fruit. This is probably due to there being no cold season permitting vegetative repose.

Better results were obtained with *A. montana*.

The Department of Agriculture has summarised the present state of the question as follows:— the results of the tests made by the Experiment Stations at Kuala Lumpur and Serdang seem to show that cultivation of *A. Fordii* and *A. montana* cannot succeed in the plains of Malaya.

New trials are being made at the Experiment Station of Cameron's Highlands, at an altitude of 1500 m. The results of these tests must be known before recommending the cultivation of *Aleurites* in Malaya.

(D). N e w S o u t h W a l e s .

The Department of Agriculture of New South Wales has made provisions for assuring the possibility of cultivating *Aleurites Fordii*. Tests have been made and a considerable amount of seeds distributed to private persons so that they may undertake trials with a view to discovering the parts of the State where the tree may be acclimatised.

Although at present matters are only in the trial stage, it is certain that when the suitable districts have been determined an appreciable quantity of Chinese wood-oil could be produced and even exported.

According to the first results the tree requires an annual rainfall of 700 mm to 750 mm at the least. It also requires hot summers and fairly cold winters so that there is a period of vegetative repose.

Although *Aleurites* are not exacting as to soil they prefer slightly acid soils, deep, sandy and light, and rich in organic matter.

The ripe fruit reaches a diameter of 5 to 8 cm and slightly resembles a small apple. In general there is only one fruit per inflorescence, sometimes, however, there are two or more. The fruit contains five or more seeds. Researches on the duration of the germinal power of the seeds have shown they they should be sown during the season following ripening.

(E). Queensland.

The cultivation of *Aleurites Fordii* is still in the experimental stage. Experimental cultivation has been carried out by the Acclimatisation Society of Lawnton, and near Brisbane, at Imbil, by the Department of Agriculture in conjunction with the Department of Forestry. There are two principal plantations, one possessing about 70 trees and the other very much bigger. Certain of these trees are at present 7 years old and bear fruit regularly. Analyses of the fruits show that they have an oil content which will bear favourable comparison with that of fruits of other countries. In Table VII will be found the results of three analyses of fruits gathered at Imbil from trees planted in 1928.

TABLE VII. — *Analyses of seeds of Aleurites Fordii collected at Imbil.*

Nature of trees on which fruits were gathered	Trees from Australian seed growing on Savannah land	Trees from American growing on Savannah land	Trees from American seed growing on forest land
Integuments	38.1 %	34 %	35.5 %
Nut	61.9 %	66 %	65.5 %
Average weight of the seed	3.57	3.01	3.29 gm
Average weight of nut	2.20 gm	2.00 gm	2.20 gm
Oil content of nuts	57.8 %	57.4 %	58.3 %

A lack of uniformity in the behaviour of the trees has been remarked in the plantations. It is considered that the trials are not yet sufficiently advanced for the Department to give a definite pronouncement on the future outlook for this form of cultivation, though the results on the whole have been satisfactory.

The work of the Acclimatisation Society has been carried a little further. According to the last report from this Society a great number of plants from seeds collected at Lawnton have been given to planters in Queensland or other States. The species with which tests have been made are *A. Fordii* and *A. montana*. The trees of both are in bearing. Already cultivation of the second species can be recommended in the hottest regions of Queensland; in other parts of the country *A. Fordii* gives excellent results. Mention should also be made of an interesting experiment in budding imported species on *A. moluccana* which is indigenous. This experiment is now in progress.

(F) New Zealand.

Experimental cultivation of *A. Fordii* was begun in 1929 at the Government Experiment Station at Te Kauwhata, since when sowing has taken place regularly every year. Germination is good and plants have been obtained which grow

well without any difficulty. These plants have been distributed, at the age of 1 year, in plantations of Auckland, Hawkes Bay and Nelson.

It is considered that the most southerly part of North Island is the only suitable district, as frosts are rare and slight. An important cultivation might be established in that district if the soils and climate are found completely favourable. The results obtained up to date are excellent.

Five companies have commenced cultivation of *A. Fordii* on a commercial scale in North Auckland.

(G) Union of South Africa.

Trials in cultivating *Aleurites* have been made in the majority of provinces in the Union of South Africa.

In Cape Colony, the "Rhodes Fruit Farm Ltd" has successfully raised 250 plants of *A. Fordii*.

In Natal tests have been more or less satisfactory. Some of the trees grown by Imperial Chemical Industries, Ltd. near Umbogintwini have flowered fairly abundantly and given a certain quantity of fruit.

The most important trials are made in the Transvaal.

According to information received, it is thought that *A. Fordii* would grow very well in the "middle veld" and "low veld" of the Transvaal, where usually there are only very slight frosts, and that plantation of these trees should be encouraged on the relatively cheap land of these districts.

The following advice may be given to present and future planters:—To plant seedlings and note the production and quality of the fruit of each tree for several years; at the end of the period the most suitable trees can be selected and the others cut back so as to act as stocks for buds from the most desirable trees. In this way a plantation can be rapidly obtained composed solely of high class trees.

(H) Rhodesia.

The Forestry Division of Rhodesia has undertaken experimental plantations of *A. Fordii*. Up to the present these plantations have chiefly been in heavy red soils, though it is known that *Aleurites* grow best in light, sandy soils.

Although results have often been encouraging it is not thought that this cultivation can become general for some time to come.

(I) East Africa.

The tests carried out in East Africa continue to give negative results in all the region from Zanzibar (at sea level) to the region of Moshi-Arusha (at an altitude of 1200 to 1700 m) in Tanganyika. It is hoped that better results will be obtained in the district of Mbeya, province of Iringa.

(J) Kenya.

The Conservator of Forests in Kenya considers that the climate of Nairobi is clearly unsuitable for *Aleurites*. On the other hand it has been stated that the tree grows better in the districts situated at an altitude of 2000 m. where the climate appears to be more adapted for their cultivation.

(K) Nyasaland.

Plantations of *A. Fordii* have recently been established in Nyasaland though at present their extent is only about 20 hectares. Results are satisfactory, the oil obtained is of good quality and a development in the plantations is foreseen, if special attention is given to selection of the fruits intended for establishing nurseries and if the advisability of budding young trees is well considered.

(L) Cyprus.

The various experiment stations of the island have carried out tests with the two species of *Aleurites*. Results were not encouraging though in certain districts isolated plants have reached a certain degree of development.

The Director of Agriculture thinks that the extremes of temperature in Cyprus, the long summer and the hot dry winds, are not favourable to growing *Aleurites*.

(M) Other Countries in the British Empire.

Results of tests made in other parts of the British Empire have not been very encouraging. In certain cases experiments have shown that the trees either do not grow or do not bear fruit. This lack of success is often due in the case of *A. Fordii* to the absence of a cold season, without which the trees have no such annual period of vegetative repose as is essential.

(5) BELGIAN CONGO.

The Belgians undertook experiments in cultivating *A. Fordii* in the Belgian Congo in 1931.

No information is yet available on the results obtained from these tests.

(6) NETHERLANDS INDIES.

In 1930 there did not yet exist regular plantations of *Aleurites* in the Netherlands Indies though *Aleurites* were already known there. The first seeds were introduced by Jacobson in 1835. The plants grew well, but they required

rich soils. At Tjipanas, for example, at an altitude of 1 000 m, their development was very vigorous. The trees began to bear fruit at about 5 or 6 years.

At present nothing remains of these plantations. The garden of Buitenzorg possesses a single example of *A. Fordii* which grows badly. Other examples were cultivated in the mountain garden of Tjibodas at 1 400 m. altitude. They fructified very late. These trees were destroyed by monkeys. In 1925 two *A. Fordii* were planted, but they did not grow well.

A. montana is not found in the west of Java, but there are a few in the east, near Djember. At Djember the *A. montana* planted for the first time in 1925 bore fruit at three years old, but this fructification was poor and irregular.

In 1930 it was decided to undertake cultivation trials. These were carried out by the Department of Agriculture, also by the Forestry Service of Java, the object being rather to find a tree for afforestation of mountain slopes than a new plantation crop, and by planters, the principal being M. G. KOCH.

The trials made by the Department of Agriculture were carried out at the Experimental Garden of Buitenzorg at an altitude of 250 m, and at the plantation of the Government of Buitenzorg at 700 m, also the Experimental Garden of Tjibinong at 130 m. The trials undertaken by the Forestry Service in conjunction with M. C. van de KOPPEL were in the north of Sumatra at Celebes, Bali and in 9 forest districts of Java.

M. G. KOCH's trials were made at the plantation of Sindang-Panon at an altitude of 700 m.

The results were as follows:—

(a) *Results obtained at the plantation of Sindang-Panon.* — Tests were made with both *A. Fordii* and *A. montana*. The trees were planted in 1930, cuttings the size of a finger being used. The holes for planting were square, 2 × 2 ft. in size.

For planting the same system was used as for Hevea. The majority of the cuttings succeeded well; some, however, were damaged by the larvae of insects. The land was uneven and had to be drained.

At first no difference was noticed in the growth of *A. Fordii* and *A. montana*, but the latter grew more rapidly later on. An unhealthy colour and brown marks were noticed on the leaves of *A. Fordii*, buds formed but the plant showed little sign of growth. On the other hand, the development of *A. montana* became more rapid and, at the end of 8 months after planting (22 July, 1931) the dimensions given in Table VIII were noted.

The *A. Fordii* came from seed from the valley of the Yang-Tsze which is cold. Perhaps the reason why the tests were not a success was that seed from the south of China was not used.

In March-April 1932 new trials were started in nurseries using seed from the south of China. At the end of 6 months, and during the dry season, no difference was seen between them and the *A. montana* planted at the same time. These last tests seem to indicate that *A. Fordii* could be grown in Java

provided they are grown from seed and that the seed comes from South China.

It is also advisable to bud *A. Fordii* on the stock of *A. montana* which is indigenous.

M. G. KOCH as the result of his trials, recommended the cultivation of *A. montana* for preference.

TABLE VIII. — Measurements of *A. montana* grown in the plantation of Sindang-Panon.

Date of measuring		Height of trees	Total length of branches
22 July	1931.	1.50 m	...
23 August	1931.	1.98 "	...
14 October	1931.	2.75 "	...
24 October	1931.	3.00 "	2 m
22 July	1932.	4.00 "	8 "
5 November	1932.	5.20 "	9 "

In Java, *A. montana* flowers and fructifies all the year, which seems to be a good point as thereby employment of a great amount of labour is avoided at any particular period. The first flowers appear on the lower branches. The female flowers develop first on the inflorescence, and inflorescences may even be seen bearing small fruits and buds of male flowers at the same time. The male flowers are 4×4 cm., they have a united calyx, 5 white petals when open with a midrib rapidly turning violet, 10 stamens united in two groups of 5. These flowers fall at the end of one or two days. The female flower is smaller and has a superior ovary with 6 pistils of a greenish colour.

Some trees grow well, some fairly well and others badly. There are also trees bearing only male flowers. Planting must be commenced with smaller spacing so that all undesirable trees can be thinned out. Selection work should be carried out in order to obtain the greatest number of female flowers per inflorescence and the largest number of seeds per fruit.

M. C. KOCH does not recommend planting with cover plants (such as *Mimosa invisa* or *Centrosema pubescens*) which might impede the gathering of the fruit or injure the development of the young plants. He prefers bushy leguminous plants such as *Tephrosia candida*, *Crotalaria* sp., etc. In order to avoid too great expenditure he thinks it best to follow semi-forestry methods in cultivating *Aleurites* which consist in retaining all the plants which grow provided they are prevented from growing more than 0.50 m. in height outside a square completely devoid of plants, which is kept round each *Aleurites*. During the first months, as the plants of *Aleurites* grow, so the wild plants are allowed to grow more freely. Complete soil clearing is only carried out when the shade cast by

the *Aleurites* prevents the growth of the wild cover plants, that is, about three years before fructification.

M. C. KOCH has also studied the question of the best method of planting, by sowing seed or planting cuttings. Tests made up to the present have shown that it is best to plant with stumps 6 months to a year old or with young plants in well cleared ground. It follows that it is indispensable to establish nurseries. They can be very simple and the usual principles may be followed in establishing them. It must, however, be noted that *Aleurites* require much light, therefore cover plants (*e. g.* ferns) must be used through which the air and light can penetrate and which will not impede the growth of the young stems.

Germination should be almost entirely completed by the end of a month. When the plants have 4 well developed leaves they must be transplanted in another nursery, the work being done before 10 a. m. and during the rainy season. In the secondary nurseries planting is effected 0.5 × 0.5 m. apart. At the end of 6 to 7 months the plants may be planted as stumps. If well packed they can travel for 5 or 6 days.

Plantation is carried out with spacing of 8 m. in both directions (160 trees to a hectare) so as to be able to thin out later on.

At the plantation of Sindang-Panon the trees commenced to flower two years after planting. Production figures for Java are not yet available.

No diseases have been noticed in the nurseries, only insects such as *Setora nitens* attacking the plants. Attacks of gummosis have been observed on certain stumps. Finally an inexplicable phenomenon has sometimes been noted which is a sudden stoppage in the growth of the plants; the leaves form, but do not arrive at the normal length, the internodes become smaller and a great number of shoots are produced at the foot of the plant.

(b) *Results obtained by the Government and the Forestry Service.* — The investigations commenced in 1930 and 1931. In 1931 seeds of *A. Fordii* and *A. montana* from China and Florida were distributed. In 1932 seeds were received from Indo-China and the south of China. Finally, in 1933, new consignments of seed were obtained from China. Table IX indicates the total number of seeds received.

TABLE IX. — *Number of seeds of Aleurites sent to Netherlands Indies.*

Year	A. Montana	A. Fordii
1930	3 000	26 000
1931	55 000	39 000
1932	201 000	—
1933	151 000	9 000

It is to be hoped that in the near future there will be 75 000 to 100 000 *Aleurites*.

In general the seeds of 1930 have germinated very well, those of 1931 badly and those of 1932 very badly. These last were received in March and April and lost their germinative power in May. This is why attempts were made to obtain seeds immediately after gathering in September and October.

The results of observations were as follows:— Generally *A. Fordii* do not adapt themselves well to the tropical climate, even at high altitudes, and their growth is poor. They are not adapted to the plains and undulating districts of western Java.

On the other hand the growth of *A. montana* is excellent. A tree planted as a stump in February, 1930, in the botanical garden at an altitude of 150 m bore fruit for the first time in August 1932. Fructification lasted until September when inflorescence appeared in the second storey of branches.

In the east of Java the trees lose their leaves during the East Monsoon. This appears to be advantageous as thereby the trees have a similar period of vegetative repose as in their own country. In the west of the country, on the contrary, where the East Monsoon is not felt, this period of repose is less pronounced. Shoots appear in the crown and the influence of this phenomenon on fructification is not yet known.

Mr. C. van de Koppel does not think that *A. montana* should necessarily be considered a new tree for cultivating in plantations simply because the first tests were to a certain extent successful. It cannot be known whether this cultivation will give successful results from a financial view point until the yields of the trees are known. He also does not believe that the oil of *A. montana* can completely replace that of *A. Fordii* of the United States and China and he fears that over-production following the development of plantations in China and in the United States will result in a continuous fall in prices.

In conclusion, taking the experiments of the various investigators as a basis, it may be said that:—

(1) *A. Fordii* might perhaps grow in the mountains in regions having a pronounced dry season.

(2) *A. montana* grows well both in the plains and in the mountains, but nothing is yet known concerning the production of seeds and oil and it is probable that this oil will not entirely correspond with the requirements of the market for Chinese wood-oil.

(3) Finally, the possibility of over-production exists.

(To be continued).

J. LEGROS.

A NEW ALMOND CRACKER

Almonds, which in some countries such as Italy, Spain and California, etc., represent a considerable source of revenue for agriculture, are cracked for sale almost entirely by hand and sometimes with machines with cylinders or presses, giving a high percentage of broken almonds which fetch half the price only of whole almonds.

The importance of reducing the percentage of broken nuts, the necessity of facilitating cracking and of reducing costs has now led to the invention and perfectioning of a new almond cracker by Mr. Giuseppe Li Gotti. This machine, based on the simplest ideas, eliminates the losses caused by breakage. It is made in various sizes suitable for the needs of small proprietors and for industrialists.

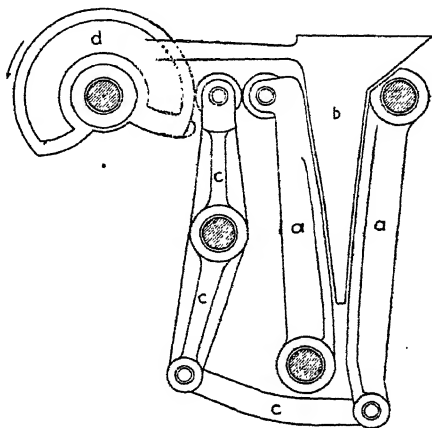
The principle of this new and original machine is to crack the shells of the almonds by pressure on the edges thereby avoiding damage to the nuts. The principal part of the machine will be seen in the figure above and it functions as follows.

The almonds in their shells are poured into a hopper. A special selector takes them one at a time, after which the almond falls between two shaped jaws. Two side pieces act as guides (*b*) for the nut until it arrives between the two jaws. An ingenious arrangement of levers (*c*) results in each almond, of whatever size, receiving the same pressure all over at the moment of cracking which is effected by means of a eccentric wheel (*d*) acting on the two jaws (*a*).

The machine is simple and strong and its use should result in considerable saving.

*New Almond Cracker
system LI GOTTI.*

The Principal Part of the Machine.



H. J. H.

MISCELLANEOUS INFORMATION

THE INTERNATIONAL INSTITUTE OF BEET-ROOT RESEARCH. — The Vth Assembly of the International Institute of Beet-Root Research, consisting of delegates from the Sugar Institutes of various European countries, a certain number of geneticists from firms supplying selected beet seed, also some scientists specialised in the study of the sugar beet, met at Brussels from 7 to 9 January, 1935, under the honorary presidency of M. LUCIEN BEAUDUIN, President of the "Société Generale des Fabricants du sucre de Belgique", and the actual presidency of M. Paul KRONACHER, Delegate-Administrator of the Belgian Institute for improving the beet.

About thirty papers were presented on the following subjects:—

(1) The influence of sun on growth — (2) The action of fertilisers — (3) Examination of new means of increasing the value of varieties of sugar beets — (4) The influence of the number of beets per hectare — (5) Growth of the beet — (6) The results of the international tests made in 1934 — (7) Heredity of the beet — (8) Diseases and pests of the beet — (9) Winter beet in 1934.

Discussions of the greatest interest followed these communications and resulted in important conclusions being reached.

The Vth Assembly of the International Institute of Beet-Root Research expressed the following recommendations:—

(1) That practical and precise methods should be brought up to date in order to establish new criteria permitting the definition, either directly or indirectly, of varieties of beets from the view point of their yield in sugar.

(2) That the work should determine exactly the relations between the juice conductivity of beets, the ash content, content in mineral matter.

(3) That researches should be carried out from the agronomical and genetic view point with the object of defining the action of all factors liable to influence the purity and the saline content of beet juice.

(4) That special attention should be given to the knowledge of the quantitative and qualitative value of ash in the juice of beets, as regards the proportion of the various bases contained and their soluble and insoluble alkalinity.

(5) That the examination of chemical characters of varieties of beet should apply, in addition to the usual determinations, to the research into their content in pectic substances, in relation to their content in sugar, the degree of compactness and maturation, according to a method to be communicated to members by M. H. COLIN.

(6) That the maturation of beets should be defined by new and precise chemical determinations.

(7) That the study of the influence of the number of plants per hectare should be continued.

(8) That the action of nitrogen, its different forms, dates of application, also that of phosphoric acid, on the optimum yield of sugar beets should be determined by a new series of trials.

(9) That tests should be arranged to determine the action of copper and boron on the vegetation of the beet.

(10) That new investigations should define the most suitable means of control of *cercospora beticola*.

(11) That studies on the crossing of sugar beet with wild beets should be continued.

(12) That studies of the action of heavy manuring on the growth and characters of sugar beet should be continued.

(13) That researches should be continued on winter beet.

The International Institute of Beet-Root Research, with the object of preparing for the VIth Assembly, requests that the titles of reports which will be included in the programme may be sent to the Belgian Institute for improving beet root, if possible, before 1 December, 1935.

A. P.

MEETING OF THE EXECUTIVE COMMISSION OF THE INTERNATIONAL FEDERATION FOR THE DEVELOPMENT OF THE PRODUCTION, UTILISATION AND TRADE IN MEDICINAL, AROMATIC AND SIMILAR PLANTS. — This meeting took place on 10 and 11 December, 1934 at the "Faculté de Pharmacie" of Paris under the presidency of M. PERROT, President of the said International Federation.

The principal object of this meeting was to prepare for the *Vth International Congress of Medicinal, Aromatic and Similar Plants* to be held in Brussels in 1935, the agenda of which will include a discussion on "normalisation", that is, the specification of a product with a view to fixing the conditions of trade in a pure and normal drug.

For this Congress, each country is free to choose its own representative, and all names will be submitted for ratification to the General Assembly of 1935.

This Congress will sit at the same time as the International Pharmaceutical Congress and will coincide with the "Journées agricoles". It will last 4 days (from Tuesday, 30 July to Friday, 2 August) and will include: — a day reserved for scientific communications — a day reserved for agricultural questions — a day devoted to visits to the districts of production of medicinal plants — a day of economic discussion including the closing session.

Each nation represented will be provided with a stand for exhibiting samples. Not only raw materials will be admitted, but also extracted products apart from any specialised form; essences may also be represented.

D. K.

1st NATIONAL AGRICULTURAL CONGRESS, HAVANA, JUNE 1935. — The 1st National Agricultural Congress of the Republic of Cuba will take place during the first fortnight of June, 1935 under the honorary presidency of M. DE LA RIONDA, Secretary for Agriculture, in conformity with the decisions adopted during the first Inter-American Agricultural Conference which was held at Washington in 1930.

M. Federico G. MORALES VALCARCEL, President of the Organising Commission of this Congress, has drawn up a provisory programme which shows the great progress made by agriculture in Cuba during the last few years.

The subjects which will be discussed at this Congress are divided into 4 main sections.

The 1st Section will treat in detail: — general and special agronomical characteristics of the principal agricultural and industrial crops in the island (ground-nuts, castor-oil plants, sugar-cane, tobacco, potatoes, maize, citrus fruits, coffee, avocado pears, cacao, sunflowers, pine-apples, bananas, rice, aleurites, jute, ramie, medicinal, melliferous, aromatic plantes, forest and garden plants, etc.). — the diseases and pests of these crops — irrigation works — agricultural machinery — agricultural meteorology, etc.

The 2nd Section is devoted to rural economy (agricultural credit, the economic situation of rural families, co-operative societies for production, sale and consumption, plans for distribution of land, agrarian reforms, etc.).

The 3rd Section will examine all problems concerning general and special animal husbandry of the country.

The 4th Section will study the different problems of rural sociology.

The subjects on the agenda are extremely interesting and of immediate importance for the economy of the country.

For all information application should be made to the "Presidente de la Comisión Organizadora del Primer Congreso Nacional de Agricultura" Estación Experimental Agronómica de Santiago de las Vegas, Havana.

A. P.

BOOK NOTICES *

HINTZE, K., *Geographie und Geschichte der Ernährung*, 330 p., Leipzig 1934, Verlag Georg Thieme.

In writing a "Geography and History of Alimentation" the author has undertaken a considerable work as the field he embraces is extremely wide and complex. What makes this book particularly interesting for farmers is that it gives an account of the history and geography of agriculture among all peoples throughout the world.

The author first treats, in an historical account, the alimentation of ancient peoples (Egyptians, Babylonians, Hebrews, Greeks, Romans).

The following chapters, classified in geographical order, give details on the history and present conditions of alimentation of various peoples in the world. The author has taken care not to give too great importance or too much space to countries with advanced civilisations, but to give, in appropriate relief, the conditions of alimentation which are most interesting among less known peoples. Thus, remarkable details are learnt on the feeding of the nordic tribes (Esquimaux, Yakutes, Tugnuses, Tchuk-tchis, etc).

Information will be found on the way in which social organisation and religious customs of Asiatic peoples have a profound influence, not only on the alimentary conditions of these peoples, but also indirectly on the whole organisation of agriculture.

In the chapter on America will be noted with particular interest the description of alimentary and agricultural conditions among the ancient Incas.

In a final summary the author states that alimentation has always and everywhere been composed of animal and vegetable matters, the latter preponderating. The seed of gramineous plants, transformed by centuries of selection into material of great value have spread all over the world, particularly in America. On the other hand, maize which originated in America, has become the chief cereal in certain parts of Europe and other parts of the world.

The number of plants cultivated on a large scale tends to diminish increasingly which from the view point of wholesome alimentation seems to be regrettable.

Finally mention must be made of the appendix containing interesting historical notes on Cereals, Vegetarianism, Geophagy and Placentophagy.

N. v. G.

* Under this heading are included short synopses of books received for review.

PUBLICATIONS RECEIVED BY THE LIBRARY

Books.

General.

ALMANAQUE GUIA DE « EL CULTIVADOR MODERNO » publicado bajo la dirección de D. RAOUL M. MIR. Año XI. 1935. Barcelona, Imprenta el Cultivador Moderno, 1935. 328 p.

MILANO, R. ISTITUTO SUPERIORE AGRARIO. Annali. v. I. Fascicolo I. 1934. Milano, [Parma, Officina Grafica Fresching], 1934. 179 p.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND, LONDON. The Farmer's guide to agricultural research in 1933. London, [Harrison], 1934. 226 p.

Plant Protection.

SOCIETÀ ENTOMOLOGICA ITALIANA. Memorie. v. XIII. 1934. Fascicolo I. Genova, Arti Grafiche « Commercio » 1934. 160 p.

Agricultural Chemistry.

WATTIEZ, N. [et] F. STERNON. Éléments de chimie végétale. Paris, Masson, 1935. 729 p.

Horticulture.

AARBOG FOR GARTNERI. 16. Aargang. 1934. Redigeret af A. M. Danvig. Udgivet af Alm. Dansk Gartnerforening. København, Møller, 1935. 283 p. [Annual of horticulture].

HORTICULTURAL EDUCATION ASSOCIATION. Scientific horticulture (formerly the H. E. A. year book). The journal of the Horticultural education association v. III. 1935. Wye, Kent, Pearl, 1935. 228 p.

SCHNEIDERS ADRESSBUCH FÜR DEN SCHWEIZERISCHEN GARTENBAU. Annuaire suisse pour l'horticulture 1935. 12. Auflage. Zurich-Wipkingen, Siegfried & Co., 136 p.

VAGLIASINDI, G. Orticoltura. Roma, Opera nazionale combattenti [1934]. 346 p. (Collana agraria dell'Opera nazionale combattenti, 7).

Animal Husbandry.

SCHMIED, F. Die Geflügelzucht des Landwirtes und des Kleintierzüchters. Wien, Scholle-Verlag Buchhandlungs-Gesellschaft, 1935. 78 p. (Scholle-Bücherei. 107. Bändchen).

Forestry.

DEUTSCHE DENDROLOGISCHE GESELLSCHAFT. Mitteilungen der Deutschen dendrologischen Gesellschaft Nr. 46. (Jahrbuch) 1934. Dortmund, 1934. 244 p.

NYGAARD, J. Skogalmanak 1935. Oslo, Grødahl & S., [1934]. 344 p.
[Almanach forestier 1935].

Agricultural Industries.

ANNUARIO VINICOLO D'ITALIA fondato dal Prof. Arturo Marescalchi. XV. Edizione 1934-35. Milano, E. Gualdoni, 1935. 578 p. (Unione Italiana Vini, Milano).

Agricultural Education.

NÄTHER, O. Die Berufserziehung des jugendlichen Landarbeiters in einem Industriebezirk. Berlin, Deutsche Landbuchhandlung, [1934]. 107 p.

Periodicals (1) (2) (3).

ACTION agricole. v. 13, 1931. hebdomadaire. Paris. 50 fr. p. a.

AMERICAN cattle producer. v. 16, 1934. mens. Denver, Col. \$ 1.00 int.; \$ 1.50 étr. (The American national live stock association). [Formerly: « The Producer »].

ARBEITEN über morphologische und taxonomische Entomologie aus Berlin-Dahlem. v. 1, 1934. trim. Berlin-Dahlem. RM. 15 p. v. (Deutsches Entomologisches Institut der Kaiser Wilhelm-Gesellschaft).

ASSAM. Department of agriculture. *Bulletin*. 1933. irr. Shillong. prix. var. par fasc.

AZIONE coloniale. v. 5, 1935. mens. Roma. L. 15 int.; L. 35 étr. [Containing since 1935: « Atti dell'Istituto coloniale fascista »].

BERLINER Tageblatt und Handels-Zeitung. Morgen und Abend-Ausgabe. v. 64, 1935. q. Berlin. RM. 48, port en sus.

BIHAR and ORISSA. Department of Agriculture. *Bulletin*. n° 1, 1929, irr. Patna.

BIHAR and ORISSA. Department of agriculture. Leaflet. n° 1, 1928. irr. Patna.

BOLETIN de bibliotecas y bibliografía. v. 1, 1934. trim. Madrid. 10 Ptas. int.; 15 Ptas. étr. (Asociación de bibliotecarios y bibliógrafos de España).

(1) Previous list December 1934. To be continued June 1935.

(2) List of abbreviations: bihebdomadaire (biweekly); bimens. (twice monthly); bimestre (every two months); déc. (every ten days); étr. (foreign price); f. (copy); hebdomadaire (weekly); int. (home price); irr. (irregular); mens. (monthly); n° (number); N. S. (new series); p. a. (per annum); q. (daily); sem. (half yearly); s. (series); v. (volume); trim. (quarterly).

(3) Between brackets [] are given translations and explanatory notes not appearing in the title of the review.

- BOLETIN de la Dirección general de montes, pesca y caza. v. 6, s. 2. 1934. mens. Madrid. [Formerly: « Boletín de pesca y caza »].
- BRASIL, açúcarairo. v. 3, 1934. mens. Rio de Janeiro. 24\$000 int.; 30\$000 étr. (Instituto do açúcar e do alcool).
- BRASIL. Instituto geológico e mineralógico do Brasil, *Boletim*. nº 1, 1921, irr. Rio de Janeiro. (Ministério da agricultura).
- CAWTHRON Institute. Pasture research publication. nº 17, 1932. irr. Wellington.
- CERTIFIED milk. v. 9, 1934. mens. New York.
- CHIMICA e industria. v. 17, 1935. mens. Milano. L. 75 int.; L. 100 étr. [Incorporating: « Giornale di chimica industriale ed applicata » and « L'Industria chimica. Il Notiziario chimico-industriale »].
- CUBA agricola. v. 1, 1934. mens. La Habana. \$ 1,50 int.; \$ 2,00 étr.
- FEDERATED MALAY STATES and Straits Settlements. Department of Agriculture. Agricultural Series. *Agricultural Leaflet*. nº 1, 1933. irr. Kuala Lumpur, F. M. D.
- INDIA rubber world. v. 91, 1934. mens. New York. \$ 3 int.; \$ 3,50 étr.
- KERTÉSZET. v. 5, 1931. mens. Budapest. Supplement to the « Növényvédelem ». (Mag. Növényvédelmi szolgálat). [Horticulture. Royal service of the plant protection].
- MARGARINE-INDUSTRIE. v. 28, 1935. bimens. Berlin. RM. 20.40 int.; RM. 30 étr. (Reichsverband der Margarine-Industrie Deutschlands E. V.).
- NATUR und Volk. v. 64, 1934. mens. Frankfurt a. M. (Senckenbergische naturforschende Gesellschaft). [Formerly: « Natur und Museum »].
- NEDERLANDSCH boschbouw-tijdschrift. v. 1, 1934. mens. Wageningen. f 10 p. a. (Nederlandsche boschbouwvereniging).
- NÖVÉNYVÉDELEM. v. 7, 1931. mens. Budapest. 8 P. p. a. (Mag. Növényvédelmi Szolgálat). [Plant protection. Royal service of the plant protection].
- PAPPERS- och trävarutidskrift för Finland. (Suomen paperi- ja puutavaralehti. The Finnish paper and timber journal). v. 16, 1934. bimens. Helsingfors. Fmk. 150 int.; Fmk. 200 étr. (Finska träförädlingsindustriernas centralförbund). [Tri-lingual edition: Swedish, Finnish and English].
- PRODUITS purs et d'origine. Revue des fraudes. v. 10, 1934. bimestr. Paris. 60 fr. int.; 75 fr. étr.
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MONTHLY BULLETIN

OF

AGRICULTURAL SCIENCE AND PRACTICE

ORIGINAL ARTICLES

DEHYDRATION OF AIR IN THE SOIL

It appears to us that to be of interest to publish from time to time the opinion of practical workers. The article reproduced below has been sent to us by a French farmer in the Department of Tar. The arguments of M. ARAGOU seem to us to be interesting, but we must leave to our correspondent the responsibility for the deductions he makes from his observations.

Dehydration of air in the soil is new idea, a fruitful idea which may enrich the farmer and explain scientifically the popular adage which everyone repeats without realising its signification, namely; «one ploughing is worth a sowing». I propose to develop this idea and to show its importance to agriculture in the light of new outlooks and with the aid of practical and scientific examples.

I. — SCIENTIFIC EXAMPLES.

(1) Numerous scientists, Danish, Swedish and German, have proved that in any soil, except that saturated with water, the air is renewed once an hour to a depth of 19 cm. thanks to that mysterious phenomenon, called diffusion. This phenomenon, about which very little is yet known, has been studied by BUCHER, SCHULZE, LEATHER, ROMELL and other scientists.

(2) A new light has been shed on this subject by LAKHOWSKY, the historian of waves of the Universe, by revealing the following facts. By means of a very sensitive seismograph it has been possible to determine a regular rise and fall in the earth's crust of about 2 m. every 12 hours. According to LAKHOWSKY this veritable respiration of the earth's epidermis could explain scientifically the phenomenon of tides. For farmers this phenomenon gives a new outlook of primary importance on diffusion.

It has begun to be understood how, thanks to this colossal breathing, really enormous quantities of air can enter the soil and sub-soil and diffuse and dehydrate there. The evidence makes it imperative that the pores of the earth's epidermis, the sole orifices for this gigantic respiration, should be kept always open.

(3) M. LEON CHAPTAL, Director of the «Station de Climatologie» at Montpellier, has published an important report, the fruit of more than 6 years' experiments. It is inconceivable that after its' publication directors of institutions and farmers have not understood the extraordinary importance of these revelations.

In the South of France the rainfall during the hot season is greatly inferior to the quantity of water consumed by the vines. Other sources of humidity therefore have to provide the difference which is never less than 2 500 m³ the hectare.

This water cannot come from a depth. In May, 1923, after a terrible drought which lasted a year and after which all the springs had dried up, all the available reserves of water in the earth had disappeared. The rise of humidity from the lower layers of the surface is moreover contrary to the observations made by several geologists on the rapid substitution of the superficial circulation by the subterranean circulation and to the experiments carried out by BOUYOUCOS.

This water which is lacking can therefore only come from the power of the superficial layer of arable soil to absorb large quantities of water vapour from the atmosphere. This property possessed by the soil of absorbing humidity from the surrounding air, provided that this soil is not saturated, is recognised by many authors, notably SCHÜBLER, BABO, HERVÉ-MANGOU, SCHLOESING, etc.; who have determined that the hygroscopicity of the earth ceases to manifest itself when the water content reaches 5 %. Researches on the earth's humidity, made at Montpellier by HOUDAILLE from 1886 to 1896, show that during the summer the water content of the soil, from the surface to 4 to 5 cm depth, is generally below 2 % and consequently very much below the limit where hygroscopicity is no longer manifested. Even at a depth of 0.25 cm the humidity is often inferior to 5 %. In the southern region, a superficial layer of at least 0.10 cm in depth can therefore, during hot season, absorb the water vapour from the atmosphere. A very simple calculation shows (taking 1.3 as the apparent density of the earth) that each time that the humidity of this layer of 0.10 cm increases by only 1 % it provides 13 000 thousand litres of water to the hectare. This provision may be considered quotidian when the weather is hot. Experiments made in 1926 and 1927 confirmed the results of these calculations. It must be concluded that all causes facilitating the penetration of air into the dessicated layers of arable land favour the phenomenon of absorption by multiplying the surfaces of contact.

It is impossible not to be persuaded, after reading this report, that when an instrument has been found to favour the phenomenon of absorption and to multiply the surfaces of the earth's contact with the air, the dessicated land in the South of France and Italy will acquire a prodigious fertility.

(4) At the Water Congress at Algiers (January, 1928), the German and Belgian delegates went much further than the Director of the "Station de Climatologie" at Montpellier. They stated that all the subterranean water came not from rain which is very insufficient, but solely from dehydration of air in the soil. They gave as an example the wells in the Sahara which, they said, could not come from non-existent rains. M. DIENERT, Director of the "Service des eaux de la Ville de Paris" and Chief of the French Delegation, made the subject clear by the following statement: "The condensation of water vapour preserves the humidity of the soil in summer when the soil breathes well, furnishes plants with the quantity of water necessary to their evaporation, but I believe that the quantity of water penetrating to the subterranean layer must be smaller" (1).

(1) Since then M. DIENERT has changed his opinion and now thinks that the condensation of water vapour of the atmosphere can feed the subterranean layers as proved by the Note he presented to the Académie des Sciences at Paris 1934 (*Comptes Rendues*, tome 193, No. 13) and which was summarised in this *Bulletin*, 1934, No. 5, pp. 215-216 (Editor's Note).

These two theories, I believe, can never be made to agree, but it is none the less certain that dehydration of air in the soil is a phenomenon of extreme importance for farmers and opens up limitless prospects for agriculture in the future.

(5) A striking example of what dehydration of the air can accomplish is found in ancient times. The engineer, TEVEUX has particularly studied the installation of 13 enormous pyramids of crushed calcareous stones at the town of Theodosia on the Black Sea (now the Crimea) which, thanks to the absorption of the atmospheric humidity, furnished, 500 years before our era, 700 000 litres of water per day to the town and its' gardens in excessively dry climatic conditions (*).

II. — EXAMPLES FROM CROP GROWING.

(1) At Nîmes in September, 1932, after an extraordinary drought lasting 18 months and during which all the springs and wells had dried up, M. MAROGER, owing to repeated surface tilling, was able to obtain a harvest of 170 hectolitres of wine per hectare and with luxuriant vegetation in the middle of surrounding aridity. (**)

The evaporation of a vigorous vine-yard being, according to all authors, and WOLFF in particular, 5 millions of litres per hectare, it may be asked where this mass of water came from.

From winter rains? — There were none. From the reserves of the preceeding year? — The wells and springs had run dry. A single explanation remains possible. The enormous dehydration of air in the soil obtained by 30 surface tillings which MAROGER was obliged to give that year to his vine-yards and which, though carried out with imperfect implements, favoured the phenomenon of absorption by multiplying the surfaces of the soil in contact with the air.

(2) In Spain, the Director of the Agronomy Station of Madrid, Mr. QUINTALLA, after having found that, at the time of earing, the hectare of wheat needed 280 000 litres of water, made the following tests in a torrid climate where only 338 m of rain falls per annum (average of 10 years). He sowed wheat and lucerne in spaced rows and during vegetation treated them with repeated surface tillings as carried out by MAROGER. The result, published with photographs, was remarkable and would have been even more so if the author had given the soil a true "pasteurienne" tilling, without ploughing, as performed by JEAN de BRU and without destroying the immense microbial population: aërobes and chlorophyll algae.

(*) At present an installation more or less analogous to this is the aerial well invented by the engineer KNAPEN and described by him at the Water Congress of Algiers (January, 1928, see Report No. 36), the first Congress of Mediterranean Hygiene (1932) and lastly at the 21st Congress of Hygiene held at the Pasteur Institute, Paris, 22 October 1934. An aerial well is functioning at Traus (Department of Var, France) and provides water for that region. On the other hand, according to Mr. Octave MENGEL ("Rôle de la condensation de la vapeur d'eau dans l'alimentation des sources" in *Comptes rendus de l'Académie des Sciences*, Paris 1931, tome 193, No. 22) certain rocky deposits composed of large builders thickly covered with grassy and bushy vegetation, act as collectors of water vapour, thus, by natural means, performing the same function as the ancient aerial wells of the Crimea and sometimes forming *out-crop springs*. (Editor's Note).

(**) See E. MAROGER, "Deux expériences sur la conduite des vignes en Bas-Languedoc", in the *International Review of Agriculture* Rome 1935. New series, Vol. III, No. 2. p. 377-384 (Editor's Note).

At the national wheat competition at Cremona (Italy), the planting of two lines of wheat separated from the next two lines by a space 40 cm wide and cultivated according to the MAROGER system with a small garden motor cultivator gave 36 quintals per hectare.

(3) The following is a personal example. A fact which has always intrigued farmers in the South-West of France and which at first sight seems to be a paradox is that when it rains after the maize has been earthed up the crop subsequently suffers much more from drought, chiefly in "battante" soil, (soil which cakes) than when it does not rain. This becomes comprehensible when the immense importance of the porous structure of the soil is realised. Rain storms beat down the soil and render it compact so that it subsequently cannot profit from the humidity in the air. If, however, instead of doing nothing after the rain, as is the custom in the south, as many surface tillings as necessary were given, as much as 75 hectolitres can be obtained.

In France there is a deficit of 800 000 tons of maize per annum:

(4) In Morocco, where it never rains in summer which is always very hot, if the lacunae of the soil are undisturbed maize is productive, but could evidently be much more so if the ideal implement could be found for finely dividing the soil.

(5) Here is another example of dehydration suggested by a brilliant description of the Sahara by the celebrated painter, FROMENTIN (*Un été au Sahara*, Paris 1857, p. 248-249) and which raises the important question of porosity of the soil and which may have far reaching consequences for desert land.

In the confines of the Sahara three or four years often pass without a drop of rain being seen, and yet a very robust tree is found, *though only in certain places*, described by FROMENTIN as follows: "Only one thing resists being consumed in these terrible summers, thanks to incomparable sources of sap...., the apricot of the south is a tall, beautiful and dignified tree ...its' foliage is extraordinarily green ...Nothing can be compared to this fascinating covering of emerald green which makes these trees resemble the toy trees of green paper which are stuck on yellow wooden stands. Like the orange and the apple tree in Normandy the apricot becomes covered with such quantities of fruit that each green leaf is accompanied by a golden fruit. What makes the contrast with the country and climate even more bizarre is that the foot of this very green tree rests on soil the colour of stubble and completely burnt up by the sun... ».

After an absolute drought of 4 years during which literally not a drop of rain was seen, is it possible to believe that the capillarity draws up, from the reserves of a violent rain storm of 4 years previously, the enormous quantity of water indispensable for such a production (1000 grammes of water to 1 gramme of dry matter)?

One is compelled to conclude that only the air charged with humidity during its' passage over the sea or the immense swamps of central Africa could deposit this mass of liquid in a soil or sub-soil with a particular contexture.

The enormous difference in temperature between the scorching air and the sub-soil, which always keeps its' freshness, should stimulate the phenomenon to a prodigious extent. It is, however evident that this special soil must have very

numerous lacunae of porous matter which do not break down or close up. A very close study is necessary which may have immense consequences for the desolate and solitary regions in the confines of the Sahara.

An extensive working of the sub-soil into galleries filled with porous matter completed by surface tilling suitable for the district could perhaps in certain regions give results that have never been hoped for.

(6) The following is an example which illustrates in a remarkable way the words of Claude BERNARD:— «when what is looked for is unknown, what is found is not understood». Two American scientists were astonished to see in Antigua in a sugar cane field suffering from drought, isolated portions where the cane had not suffered. By means of porcelain cones buried in the earth they studied the action of humidity in the different plots. They were obliged to recognise that no direct relation was found between the total amount of water in the soil and the power of the soil to provide water. The question is; is the power of the soil to provide water independent from its' normal humidity and from whence does the soil obtain this supernatural power? All this was incomprehensible until the idea of dehydration of air in the soil came into question and which alone can explain the inequalities of vegetation by a different constitution of the various plots. These scientists also remarked the fact, which must on no account be forgotten, that the plants which had not suffered were in the most calcareous parts, lime and chalk being in fact extremely porous matters. The idea of dehydration is, however, so little understood that these scientists were not able to give any explanation of this anomaly.

(7) Finally, the following examples appear to give the most convincing proof of the importance of dehydration of air in the soil and which at the same time invalidate the pretended superiority of soluble, and very costly, manures over insoluble or only slightly soluble manures.

(a) Prof. LAGATU of Montpellier, author of the theory of Foliage Diagnostics, has recognised that in certain cases chemical soluble manures are not, or only slightly, efficacious. "It is not rare," he says, "that such manuring of vines which is efficacious one year, should be inefficacious another. The second case is clearly explained by Foliage Diagnostics; in cases of inefficaciousness, generally due to persistent drought, the nutrient principals of the manure do not enter into the leaves".

(b) In a pamphlet entitled *Nos visites aux vignes sans charrue* two well known vine growers, M. SEMICHON (Director of the "Station regionale d'Oenologie" of Narbonne) and M. DUPUY (professor of agriculture at Narbonne) have shown that in *naturally very dry* soils certain vine growers, employing the methods of cultivation I have called "Pasteurienne" (cultivation of the soil by repeated surface tilling) have abandoned the use of all manures for the last ten years, having found them useless, and their vines are finer than those of their neighbours.

This is a startling proof of the importance of dehydration of air in the soil with the aid of microbial life encouraged by finely dividing the soil and abandoning the plough which by the disastrous reversal of 3 microbial layers of the soil, brings ruin daily to the farmer.

" The complete fine division of the soil, essential for dehydration and the prodigious activity of the microbial population, should be scientifically organised with new implements multiplying the surfaces of the soil in contact with the air.

We cultivate the land badly... By finely dividing the soil quantities of nitrogen can be obtained far greater than the requirements of the most abundant harvest " (DEHERAIN: *Les ferments de la terre*).

Here then is the fundamental idea which establishes the technical interpretation and the cultural unification between the two great principals of up-to-date agriculture; the intensity of microbial life and dehydration of air in the soil.

No microbe of any kind can live except in a liquid and all plants need enormous quantities of water. Nothing, therefore, can be done in agriculture without this essential food: — water. What is the mechanism that will obtain from the air this water which is almost always lacking in our soil ?

All the water which is normally found in arable land is called interstitial liquid and covers, either by absorption or adhesion, all the particles in the soil. It therefore follows that the greater the tenuity of these particles, the greater the absorbent surface, the more the earth will be porous and consequently the greater the quantity of liquid provided by the air, the more active will be microbial life and the more vigorous the vegetation. To obtain all this every soil must be cultivated and finely divided according to its constitution and the resistance properties of its' structure.

As a guide in the difficulties of practical adaption two typical experiments exist which succeeded perfectly in two essentially different, kinds of soil.

(a) JEAN de BRU only employed his cultivator 6 times in the interval between two cereal crops from 10 July to 15 October, the reason being that his detrital, schistose soil, with coarse particles possesses a rigid contexture containing no clay and therefore cannot agglutinate.

(b) MAROGER had a soil with a light texture, the fine particles of earth agglutinated too rapidly at the surface, blocking the air inlets. Thus, in 1923, when the need of atmospheric water was particularly felt, he was obliged to till his vines 30 times, very lightly it is true, in order to combat this tendency to agglutinate which we will now discuss.

The particles of earth vary from coarse to minute, from sand which has 5 000 grains to the gramme to mud which has 34 millions of grains to the gramme and clay which has as much as 48 millions. It has been seen above that tenuity must be sought for when cultivating the soil, but then another very great disadvantage arises due to excessive tenuity. The corpuscles having a diameter of less than 1 micron are always colloidal, that is, agglutinant and are the greatest drawback for the farmer. It is these corpuscles which cause the deplorable poverty of the land called " battante ", unfortunately too common. After flooding or rain or simply because of their constant and constitutive tendency to agglutinate these particles weld at the surface either with each other or with the particles of sand and thus form an insulating and impermeable crust that must at all costs be broken up by, if necessary only superficial, but rapid and constant tilling. With present day cultivation when the reversal of clods of earth by the plough

seems to be in defiance of all good sense and when surface cultivation is so little known, this necessity is ignored and the air inlets close up, diffusion is very bad, water is insufficient, the microbial population, ruthlessly decimated, no longer perform their service and the farmer ruins himself in the purchase of costly soluble manures to replace the disappearing microbial activity.

When these new ideas have been understood by farmers and when close collaboration between cultivators and constructors has resulted in instruments capable of giving 13 000 litres of atmospheric water per hectare, as has been said by the Director of the "Station de Climatologie" of Montpellier, the southern countries, which already have the sun, will become veritable Eldorados.

I appeal for the collaboration of all men of good will in carrying out this great work.

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OLIVE-GROWING IN VARIOUS COUNTRIES :

(4) TUNIS, ALGIERS AND MOROCCO (FRENCH ZONE)

In ancient times the olive underwent an extraordinary development in North Africa. The Phoenicians were the first to import this cultivation on a small scale along the coastal regions which was increased by the Romans who established vast olive groves, later gradually destroyed by the Arab invasions. It is estimated that at this epoch in the territory which is now comprised by Tunis, there were 1 500 000 hectares of olive trees, chiefly in the Centre and South, now almost denuded of these trees.

The production of the three countries considered in this article is about 9 % of the world production of olive oil and about 20 % of the world exportation of this product, figures which would have been considerably higher in the near future if the oil crisis had not partially paralyzed the work of reconstruction of olive groves that was started at the beginning of this century and had increased during the last few years.

We will now briefly discuss the present state of this cultivation and its respective industries in territories which were for seven centuries one of the chief sources of olive oil.

I. — TUNIS.

Of all the African countries Tunis is the one where the most importance is given to olive growing and where the greatest number are cultivated. At the present time there are about 18 millions of olive trees occupying about 350 000 hectares with an annual production of 2 ½ millions of quintals of olives from which about 450 000 quintals of oil are extracted. The average yield of olives in oil is about 18 %. Production in 1934-1935 is calculated at 600 000 quintals.

Wild olive groves cover an area of about 50 000 hectares, principally in Souk-el-Arba, Tabarka, Bizerta, Medjez-el-Bab, Béja and Kairouan. Budding wild

olives is at present encouraged by exempting them from all forms of taxation for a period of 15 years. The number of olives per hectare varies greatly, from 100 to 150 trees in regions with the heaviest rainfall to 20 to 40 in the more arid regions.

Practically the olive prospers in all parts of Tunis, though the most important olive growing regions are Sahel and Sfax, that is, the coastal regions subject to moisture laden winds from the sea. In some districts the olive is grown in association with vines and cereals, particularly barley.

The number of varieties cultivated is considerable (*). Taking the size of the fruit as a basis, these varieties are divided into three classes: (1) Large fruits; (2) medium fruits; (3) small fruits. The varieties with small fruits are those which are used for oil extraction, the large fruits are intended for table consumption. As an enumeration and description of these varieties, from the botanical point of view, do not come within the scope of the present article we will limit ourselves to a brief description of those of major economic importance.

The two principal varieties cultivated for oil are: — the *Chemlali* and the *Chetoui*. The first includes 60 % of the total number of olives. It is a vigorous, coarse growing variety of large size and very resistant to drought. The fruit is small (weighing about 1 gramme) and is one of the varieties richest in oil. It is principally grown in the districts of Sahel (Sousse) and Sfax. The second variety includes 20 % of the total number of olives and is chiefly cultivated in the North. The fruit is larger (weighing about 2.5 grammes) than the first variety and the yield in oil varies according to districts, from 20 to 32 %. Among varieties grown for table consumption the ones most cultivated are the *Meski*, the *Zarazi*, the *Besbassi* and the *Saiali*. The fruit of these varieties has firm flesh, fine skin and small stones.

Methods of cultivation vary according to regions and it may be said that the trees receive the most attention in the driest districts. While in the rainy zone the olive forms only a small part of the annual cultivation perennial, herbaceous or ligneous, in the north it constitutes the principal source of existence for numerous rural populations, together with sheep rearing and barley growing. The number of persons engaged in olive growing in Tunis amounts to about 450 000.

In the north the olive suffers from drought chiefly where the soil is shallow and compact; in the South it is possible to cultivate the olive in deep, light soil as here the tree is more resistant to drought than in the North on account of the quality of the land, the influence of atmospheric humidity due to the proximity of the sea and also the good methods of cultivation employed. It is in the district of Sfax, where good methods of cultivation in a dry region have been most developed, that the best results are obtained.

The olive groves are only rarely irrigated. Methods of pruning, practiced in a very scientific manner in the district of Sfax, are more or less well carried out in other regions. Manuring is practiced, the extent being dependent on the quantity available. Commercial fertilizers are little used.

(*) J. A. TOURNIEROUX describes in his "L'Oleiculture en Tunisie", Tunis 1930, 371 p. Imprimerie Centrale, 7 rue d'Italie, about 40 varieties of olives cultivated.

The climate of Tunis, characterised by a rainy season from November to March and a dry season from April to October with frequent winds and great insolation, is the greatest defence against the various pests of the olive which generally cause little damage to cultivation. The development of the *Dacus* is greatly impeded by the *Opius concolor* which finds conditions in Tunis very favourable to its' development.

Experimental olive groves exist: — one established in 1905 in the Colonial School of Agriculture at Tunis and which contains various foreign varieties from Spain, Algeria, France, Italy, etc., and the other established in 1926 at Ariana (near Tunis) in the land belonging to the Service of Botany and Agronomy where a collection of foreign and native varieties are cultivated with a view to comparative studies of their qualities and defects.

In Tunis the Government interests itself in the olive and its by-products in various ways:— (1) By the Technical Services, whose agents advise growers, organise competitions in pruning, budding, cultivation, manuring, etc.: (2) By the laboratories, particularly the experimental oil-mills of Tunis and Sfax which carry out tests in oil extraction, conservation of olives, analysis and conservation of oils, etc.: (3) By appropriate legislation on the organisation of the control of pests, the establishment of co-operative societies, associations of producers, etc.: (4) By the Service of the Ghaba which assures the supervision of conditions of upkeep and cultivation of olive groves in the North: (5) By the Office of agricultural experimentation and propaganda which encourages experimentation, organises competitions, particularly in mechanical apparatus for gathering olives: (6) By the Office of olive oil at Tunis which is interested in all legislative and commercial questions relative to the products of the olive:— documentation propaganda, etc. This Office which has its' headquarters at Sfax, rue Henry-Boucher, publishes a well documented and extensive monthly review entitled "*Feuille d'Informations oleicoles*" giving the state of the various question relative to olive growing from the national and international view point.

The rapid treatment of the fruit is being encouraged so as to avoid the fermentations harmful to the quality of the oil. Some oil mills in the South store the olives in silos situated on the first floor of the mill.

Milling is carried out by means of two cylindrical grind stones which revolve at a speed of 12 to 13 revolutions per minute. The capacity amounts to about 500 kilogrammes of olives per hour. Generally two compressions are given. The baskets, made of esparto grass, are about 60 centimetres in diameter and contain from 3.5 to 4 kg of pulp. The oil is preserved in underground, tiled depositories.

There are 1052 mills with a single grinding apparatus, 124 with more than one and 344 where the oil is extracted mechanically.

The Decree of 10 February, 1931, regulated the trade in olive oils. All edible vegetable fats should be marked so as to indicate their origin, from fruit or seed. The mixture of olive oils with vegetable fats is prohibited for commercial purposes.

The functioning of co-operative societies is regulated by the Decrees of 4 July, 1907, 1 February, 1922 and 20 April, 1928. There are three co-operative societies in existence: one at Kledia founded in 1925, one at Ghardimaou, estab-

lished in 1928 and one at Djedeida established in 1930. The Government grants loans to these societies at a reduced rate of interest.

Olive oil is used as a lubricant by a certain number of automobile manufacturers. The Section of Rural Engineering of the Colonial School of Agriculture at Tunis is carrying out investigations on the conditions of its' utilisation in agricultural motors engines.

The prices quoted for olive oil have diminished greatly during the last few years, in fact, from a maximum of 1120 to 1350 francs per quintal in 1926 and 1927 for oil from the first compression, they have fallen to a minimum of 300 francs at the end of 1933. In 1934 the average price of olive oil was 328 francs per quintal. At present the prices are tending to rise though they are still ruinous to the olive growing industry.

The principal markets for export are Italy, France, the United States, England, Tripolitania and Malta.

Internal consumption of olive oil is about 150 000 quintals per annum, or 6.5 kg per capita. Therefore, about 300 000 quintals are available annually in Tunis for exportation.

The production of residue oils is estimated at 60 000 quintals, and is absorbed, almost entirely, by the soap industry. The cake is used either for cattle feed or for manure. Husks were quoted at 100 francs the ton in January, 1935.

The Government has founded an Office of Standardisation charged with the classification of olive oils and the establishment of marks of origin and guarantees for the oil. This organisation works in collaboration with similar institutions in Algiers and Morocco. From January, 1935, a bonus was accorded on olive oils intended for export to non-producing consuming countries.

At present 65 % of the production is exported, the prices being influenced by the world market. Exports from Tunis depend largely on the production in Spain and Italy. The small harvests obtained in these countries in 1934 permitted Tunis to export more than 460 000 quintals of oil to the value of 150 millions of francs.

Tunis possesses vast areas of land where only the olive can be cultivated and during the next few years production will increase as there are still areas where the olives have not yet come into bearing or where they have not yet reached their maximum yield. Although internal consumption could absorb a larger quantity of oil (the annual consumption per capita is 6.5 kg against 12 kg in Spain, Greece and Portugal), given suitable measures for protection and propaganda for olive oil, the principal branch of economy in the country; it is necessary at the same time to maintain and increase exportation, which has been favoured the last two years by the failure of the harvests in Spain and Italy, by studying the application of this product to new industrial uses.

II. — ALGIERS.

According to statistics in 1932, the total number of olive trees amounts to 15 215 788, of which 6 141 899 are wild olives, 2 082 767 have not yet come into bearing and 6 991 122 are producing. These trees produce 1 580 000 quintals.

of olives from which an average of 214 000 quintals of oil are extracted annually. Production in 1934-1935 is calculated at 137 000 quintals. The average production of olives for table consumption amounts to about 126 000 quintals per annum. Regular plantations cover an area of 70 000 hectares.

The principal regions of production are:— Guelma, Philippeville and Bougie, in the department of Constantina; Tizi, Maillot and Palestro, in the department of Algiers; Saint Denis, Bel Abbès and Tlemcén in the department of Oran.

The establishment of a list of the most important varieties of olives, with their botanical and economic characteristics which would clearly distinguish and classify them according to their respective qualities, is today, from all points of view, a necessity which becomes increasing urgent. This study presents greater difficulties in Algiers than in other countries (Spain, Italy, France, the United States), where selection, carried out for several centuries, has permitted the progressive elimination of varieties least suitable for cultivation and industrial use. It must be taken into account, also, that at least 75 % of the olives in Algiers are possessed by natives who show an indifference to or incapacity for any kind of systematic study. The lack of Experiment Stations for olive growing in the principal regions has further complicated the problem. In spite of this the Governor General of Algiers is at present, in his experimental olive groves at Maison-Carrée and Bougie, engaged in classifying, botanically and industrially, the numerous varieties cultivated or growing wild in the country.

On account of primitive methods of reproduction and budding practiced in ancient times, an infinity of types of olives exist in Algiers, the identification of which presents serious difficulties and whose morphological characters vary considerably according to the land, methods of cultivation rainfall, altitude, etc.

Methods of cultivation vary according as to whether it is a question of budded wild olives or of regular plantations. Generally the former predominate in mountainous regions in the Centre and East of the country. In low laying regions, particularly in the plains of Cheliff and Oran, regular plantations are found which are well cultivated. In the first case it is customary to give only a superficial cultivation to the olives. Where circumstances permit, and particularly at Kabyle, intercalary planting of olives and cereals, beans, chick-peas, vines, etc. is practiced and in this case the trees benefit from this cultivation.

It is necessary to make a clear distinction between European and native cultivation. Of the 15 215 788 olive trees in Algiers, 11 603 290 are owned by natives who give little attention to their trees. Pruning as practiced by the natives is most irregular and unscientific, and has a prejudicial effect on the growth and fructification of the trees. The Governor, during the last few years, has organised itinerant instruction on pruning, the benefits from which are beginning to be seen especially in the districts of Tlemcén and Gelma.

Indigenous olive trees are in general the result of budding wild olives thanks to which the trees possess incomparable qualities of resistance to adverse conditions. The system of budding practiced is usually crown grafting.

The regular plantations belong almost entirely to Europeans who apply the best methods of cultivation. Only about a thousand hectares are irrigated, chiefly in Oran, the plains of Sig and Habra and in the districts of Relizane.

and Inkermann. Two experimental olive groves exist: one at Maison-Carrée, near Algiers, and the other at Bougie where tests are made in acclimatising foreign varieties and experimental work with native varieties is carried out.

The Governor encourages cultivation by according bonuses which vary from 3 to 5 francs per tree planted (5 francs for 1 to 150 trees, 4 francs for 151 to 250 trees and 3 francs for plantations of more than 250 trees). To obtain this bonus the young plants should be healthy, vigorous and at least 5 centimetres at the collar. In addition, bonuses, which vary from 2 to 3 francs, are given for each wild olive budded according to the established rules. To obtain this bonus the trees should be vigorous and the ground should have been worked within a minimum radius of 5 metres around the tree budded.

The regulations on the production and trade of oils which exist in France also apply in Algeria. Olive oil has a serious competitor in seed oil, chiefly ground-nut oil, in fact, during the last five years Algeria has imported an average of 200 000 quintals of ground-nut oil against an exportation of olive oil of 142 500 quintals at the lowest period.

Residue oils are absorbed for the greater part by the soap industry, Bougie being the chief centre.

The Section of Rural Engineering of the Agricultural Institute of Algiers is carrying out a series of tests on the uses of olive oil as a lubricant. It must be mentioned that the use of this oil as a lubricant for automobiles is becoming general in the country, particularly in the region of Tlemcén.

The Service for the protection of cultivation has undertaken various experiments in the control of pests, principally the scale insect, by means of emulsions with an olive oil basis specially prepared for this purpose, and intended to replace, in case of need, the white oils whose efficacy is evident but whose use is relatively costly. The first results obtained are encouraging, though it is not yet possible to draw definite conclusions.

In 1920 the principal and almost only market for export was France, but in the last 15 years exportation has developed to Italy, England and the United States. Exports amount to about 118 000 quintals per annum, value about 50 millions of francs. In January 1935, Algerian olive oil was quoted at 350 to 375 francs the quintal in the Marseilles market.

The Governor, through the competent Services, has planned a vast scheme for developing this branch of cultivation and the respective industries. The sale of oils has been regulated, loans granted, tariffs on land transport reduced and new uses for olive oil encouraged.

By the Decree of 2 November, 1934, a bonus of 30 francs per quintal has been accorded for oil produced between 1 November, 1934 and 15 March, 1935. To obtain this bonus the oils should be from the first compression, extracted from fresh, sound olives by mechanical means, without any chemical treatment or mixture and should be of first quality containing less than 1 % oleic acid.

Co-operative societies have been encouraged, the number of which is steadily increasing, the principal being at Mouzaïville, Mitidja, Boufarik, Hamman bou Hadjar, Tlemcén, Philippeville, Oued Frafah, Bône, etc. The Government

subsidises these co-operative societies also the regional associations of olive growers by establishing nurseries, trees from which are distributed at low prices among the members of these associations.

Olive growing in Algiers is capable of further development, as at present production is inferior to consumption.

This development is bound to be slow from every point of view owing to the majority of trees being owned by natives who are, by instinct, opposed to all progress. All the same the Governor tries by all means in his power to encourage this cultivation on which the prosperity of many regions is dependent. Above all it will be necessary to increase commercial regulations to protect olive oil against the disastrous competition from vegetable fats, and particularly ground nut oils.

III. — MOROCCO (FRENCH ZONE).

It is estimated that the total number of olive trees amounts to 6 millions, half a million of which belong to Europeans colonists. Regular plantations cover an area of 12 to 15 thousand hectares. The number of trees per cultivated hectare varies considerably: from 150 to 200 in plantations in the plains to 45 to 80 on the mountain slopes.

Native production is subject to great fluctuations as the majority of the groves are composed of old trees, receive little attention, are seldom if ever manured and are periodically injured by beating with poles. Production of olive varies between 500 000 to 1 000 000 quintals per annum, from which 75 000 to 190 000 quintals of oil are extracted. The variations in production are more noticeable in the South than in the North. In the southern regions there is a scarcity of rain, and in the autumn it is generally very dry. The most important olive growing centres are in Fez (1 750 000 trees) and Marrakech (1 560 000 trees). A good harvest is rarely obtained in the same year in all districts.

Olive growing is increasing considerably in the South, chiefly in Tafilalet, Haut Drâa, Dadés and Haut Sous.

An association has recently been formed which groups the European and native proprietors, called the "Union Fédérale Oléicole du Maroc", with preadquarters at Fez.

The number of varieties cultivated is greatly reduced. There are three or four (« Verdala », « Tlemcén », « Sevillana ») whose fruit is used for oil extraction and one or two (« Meslala », the large olive of Tlemcén) whose fruit is absorbed by the preserving industry. For this reason the olive groves are very homogeneous.

In the experimental grove of Ménara (Marrakech) which comprises some 7 000 trees the majority of which are native varieties, trials are being made in pruning and rejuvenating the trees and tests in manuring and irrigation. In these groves trees have been recently planted of the majority of varieties of olives cultivated in the Mediterranean basin both for oil extraction and table use.

In the North the groves are not irrigated though in the South irrigation is increasingly practiced. The average yield in olives per tree varies from 8 to 22 kilogrammes.

Olive growing is encouraged by awarding a bonus of 3 francs per tree planted or budded in good condition. This bonus is given only to plantations with a maximum of 100 trees per hectare, and cannot exceed 3 000 francs per grove in one year. In this way 40 to 50 thousand trees are planted each year.

Harvesting the fruit, by somewhat rudimentary methods, begins generally at the end of October or November. During the period August-September the traders and retailers of olive oil visit the groves and buy the whole harvest. These persons as a rule know the value of the groves, the yield in oil, the quality of the product, etc., and thus run the minimum risk in the transaction.

Methods of oil extraction are very rudimentary. There are many native mills, all of the same antiquated type, distributed through out the whole olive growing zone. The oils obtained in these mills are dark in colour, contain a considerable amount of acid, are thick and have a disagreeable flavour (due to the pernicious method of storing the olives before milling). It is consumed by the natives alone who also use it for making soft soap. The oil mills belonging to Europeans are equipped with modern machinery and amount to 11 in number, of which 3 are in the district of Meknès, 3 in the districts of Fez and Ouergha, 4 in the district of Marrakech and 1 in the district of Oudjda.

The yield in oil varies greatly according to varieties, time of harvesting, methods of cultivation, quantity and distribution of rainfall, duration of conservation of the olives before milling (the natives sometimes conserve the olives in silos for several months) and, above all, the method of extraction. Native mills obtain from 9 to 16 % of oil, while in the European mills, using all the most up-to-date methods, the same quantity of olives produces a yield of 18 to 24 % of oil. The Trial Station for machinery is occupied in the study of the utilisation of olive oils as a lubricant for agricultural motor engines.

The natives consume a great quantity of black table olives prepared by European traders.

The Visirial Decree of 22 November, 1921 regulated the sale of oils and vegetable and animal fats, and that of 27 February, 1928, exportation. The oils which compete with olive oil are:— ground-nut and soya oils, imports of which amount to 100 000 quintals per annum.

Exportation of olive oil from Morocco is nil. On the other hand 32 500 quintals were imported in 1933, chiefly from Algiers and Tunis.

At the beginning of the present year the prices quoted for olive oil at Casablanca and Fez were from 320 to 365 francs the quintal.

Olive growing in Morocco is of far less importance than in Tunis and Algiers. All the same, it constitutes one of the principal elements of national economy and its progress is in strict relation to the application of a vast plan of reconstruction and rejuvenation of the groves, and the transformation of existing mills. The olive oil crisis has been little felt here as ownership is of the native family type and the production is consumed entirely within the country.

The tendency in the olive oil world market has been, during the first three months of the year, towards a slow, but continuous rise in prices. It is very probable that this rise will continue during the next few months as the stocks available are being exhausted in the majority of countries chiefly owing to the failure of the harvest in Spain and Italy in the last two olive seasons.

A. PASCUAL.

CULTIVATION OF *ALEURITES*, WOOD-OIL TREES (*concluded*) *

(7) THE UNITED STATES OF AMERICA.

(a) *History*. — It appears that the first seeds of *Aleurites* were introduced from China into the United States of America in 1905, when the Department of Agriculture received seed from the Consul General of Han-Kow. The seeds were sent to the Acclimatisation Garden at Chico, California, on 18 March, 1905 and were probably sown immediately. About this time the American manufacturers began to be interested in the use of Chinese wood-oils and many enquiries were made on the sources of production, the quantities produced, etc., from the American representatives in China.

From 1905 to 1912, the Department of Agriculture distributed *Aleurites* to various collaborators in North and South Carolina, Georgia, Florida, Mississippi, Louisiana and California. In 1913 David FAIRCHILD published a pamphlet in which he described the tree, its uses and behaviour in many of the southern districts. He expressed the view that these plantations would be remunerative especially in southern regions where the winter temperature is not too low and land is cheap.

The first experimental plantations were made at the Experiment Station of Florida in 1912, but no accurate information is available on the behaviour of the trees till 1921.

In 1913, the American Tung Oil Corporation made the first plantation of any size, at Gainesville. The object of this plantation was to demonstrate the possibilities of producing wood-oil in the United States and to inform growers on the best methods of cultivation, fertilisation, etc. The trees in this plantation began to produce at the age of 3 years.

In 1924 the Alachua Tung Oil Company was founded which purchased 2 000 acres of land near Gainesville which were gradually planted with *Aleurites*. Afterwards *Aleurites* were successfully grown in California, Alabama, Louisiana, Mississippi and Florida, though California is not considered to be a favourable region for the commercial cultivation of these trees as land there is not cheap. The largest plantations were made in the north of Florida, Mississippi, Louisiana and Alabama. In these four States it is still possible to obtain large areas of land at a price suitable for *Aleurites* cultivation.

* The 1st Part of this articles appeared in this *Bulletin*, 1935, No. 3, pp. 129-170.

(b) *The present state of cultivation.* — As the result of work recently carried out on the growth of *Aleurites* in the United States, a very limited area has been established in which Chinese wood-oils could be grown with success. Generally speaking, this zone reaches from the southern boundary of Georgia to the south of the central part of Florida and to the west along the coasts of the Gulf of Florida, in Alabama, Mississippi and Louisiana. The flowers are very sensitive to cold in the early spring and they are often killed in certain districts in the north of Florida. The tree itself is robust enough to resist occasional cold, but it will not flourish in districts where there are long periods of cold.

The following are approximately the areas now cultivated in the various southern States of North America.

Florida	16 600 acres	Mississippi	27 000 acres
Georgia	3 500 »	Texas	4 000 »
Louisiana.	2 500 »		

Recent investigations have also shown the other conditions necessary for obtaining remunerative cultivation of *Aleurites*. These investigations have been made, principally by the Agricultural College of the University of Florida, on budding, fertilisation, types of soil required, seed selection, etc.

(c) *Choice of land.* — To arrive at economic production of Chinese wood-oils land should not cost more than 10 dollars per acre. The best results seem to have been obtained on new land which has to be cleared. In fact, the old land which has been already cultivated is impoverished while newly cleared land seems to give exceptional plantations.

A careful analysis of the soil is necessary to determine its composition and the degree of humidity. Land with a high content in lime and badly drained should be avoided. In fact, though the trees require considerable rainfall, their roots cannot remain in water. It is therefore necessary to make sure that the water table is at a sufficient depth so that the extremities of the roots are not obliged to remain in continuous contact with the water when the trees and their roots have reached complete development. When land is not suitably drained the trees may grow for some years, but afterwards they begin to deteriorate.

(d) *Establishment of Plantations.* — When preparing the soil the usual work of ploughing and harrowing is carried out.

In general, for propagating plants, the method followed consists of sowing the seeds in a nursery in February and transplanting the young plants at the end of a year. These plants in suitable conditions of temperature and soil are 1 to 2 m. in height. The method of sowing in nurseries is preferable to sowing direct. As the germinal capacity of the seed is short sowing should take place during the season following maturity. In the nursery the rows are at least 1 m. apart and the seeds are sown 20 to 30 cm apart and at depth of 5 to 10 cm. Germination requires about 60 days. Only decorticated seeds are sown so as to obtain well shaped plants.

Two methods have been suggested for final transplanting. In the first the trees are planted in rows 8 to 10 m apart and 5 m from each other, in the second the spacing is 8 m. in all directions. In the first case when the trees are planted closely together in rows one or two can be removed if necessary, at the end of 8 or 10 years. It is thought at present that the best results are obtained by planting 200 trees to the acre without subsequent thinning.

(e) *Manure.* — In order to obtain high yields the trees are freely manured for at least the first 8 years. Investigations have been made on the time of year most suitable for manuring, the most economical kind of manure and the quantity that can be applied with advantage. Examination of the trees shows that the terminal buds give flowers and fruit in the spring, and from them are formed the branches which produce the terminal buds the following season. Thus, while the fruit is forming and ripening, the branch and bud which will bear fruit the following year are in process of formation. It is at this time that the trees expend most energy, therefore the first application of manure is given at the beginning of February before the buds begin to swell, so as to facilitate the development of fruit-bearing buds.

The best period for the second application of manure is in July when the fruit is ripe. Suitable manure applied at the right time can increase the number of fruits for the following season. Eighteen months after manuring, the fruit which is affected by this application will be ripe. If the tree is not suitably fertilized the effect will appear 18 months later and another 18 months will be required to bring back the tree to its full yield. It will therefore be seen that errors in the date of manuring can cause a loss of 3 years.

According to B. F. WILLIAMSON, the best manure is a composite fertiliser containing 5 to 6 % nitrogen, 10 to 12 % assimilable phosphoric acid and 2 to 3 % potash. It is not applied until the plants have reached a minimum height of 15 cm.

Green manure is also used and cover plants which enrich the soil and prevent the growth of weeds. It is usual to keep the soil completely cleared round the trees, sometimes, even, it is covered with asphalted paper.

Economies can be made by pasturing sheep or cattle so as to avoid having to cut down weeds, they also provide a certain amount of additional manure.

(f) *Selection.* — Research work has been carried out in the United States in order to select the seeds which will give the highest yields. For this purpose information has been collected showing the constant differences in the individual production and striking contrasts have been determined in the annual production, for several consecutive years, of the trees studied. There are other factors than inherent prolificity which influence fructification; it however, seems reasonable to expect more prolific descendants from highly productive parents. It has not yet been established whether a highly productive line can be perpetuated only by seed selection. The desirable characters of a given tree can be conserved by vegetative propagation. Among the systems of asexual propagation budding seems to be the most easily performed. Shield grafting should be employed.

The shield is removed preferably in spring when the bark is easily detached. The shield is taken from the wood of the preceding year. Mr. C. B. van CLEEF has been able to show that it is possible to bud in August and September on stocks sown in February. The eyes intended for shield grafting should be chosen with care as many are blind and will not develop. The grafts are held firmly in place by a strip of material coated with wax which can be removed at the end of 8 or 10 days when the union between the stock and the bud is sufficiently strong.

Buds of *A. Fordii*, in particular, graft very well on stocks of *A. montana*.

(g) *Varieties*. — Differences noted in the plantations in Florida have led to three varieties being distinguished, namely:—

Craig variety. — Named from a planter in Florida who observed for the first time the difference between fruits. The principal peculiarity of this variety lies in the large size of the fruits many of which, owing to bundling of the fruit bearing stalks, are of great size or deformed.

Certain of these fruits contain as many as 22 seeds.

The yield of this variety is no higher than the normal.

Moore Variety. — This variety was recognised for the first time in the plantations of the Alachua Tung Oil Company, near Gainesville.

The leaves are twisted, rolled inwards and frequently have two lobes; they are smaller than the ordinary.

The fruit is smaller than normal and has an exceptionally thin integument, almost like paper.

The tree is very prolific, but it is not vigorous. At the present time it has little commercial value.

Florida Variety. — The trees of this variety are characterised by their clustered fruits and by high productivity.

h) *Pruning*. — Pruning of *Aleurites* does not seem to be recommended as the fruit appears only on the terminal branches of the preceding season. It is advisable to obtain trees whose first branches are low, and this can only be done by cutting back the young plant very low down at the time of transplanting.

The dormant eyes on the trunk of the young tree may be made to develop by removing a strip of bark just above the eye. This should be done in early spring. The economic advantage of this method has not yet been determined.

i) *Harvest*. — Gathering the fruit is simple, above all when the soil is bare. The fruit ripens in October and November and falls to the ground where it can be left until a convenient moment for collecting as the integument protects the seed for a long time. The fruit is left to dry in such a way as to avoid fermentation and then taken to the oil factory.

j) *Yields.* — Experiments have shown that the highest average yields are obtained with trees bearing several fruits per inflorescence; the seeds from such trees are slightly smaller or lighter than from trees with a single fruit per inflorescence.

Many factors must be taken into consideration in the yield in oil:— the percentage of pulp and integument in the fruit in relation to the seed—percentage of integument in the seed in proportion to the kernel—the oil content in the fruit—the quantity of fruit per tree. According to investigations made with various trees at the Gainesville station it was found that the maximum percentage of seed in air-dried fruits was 66.4 % and that the minimum percentage was 50.2 %, that is, at the most a difference of 16.2 %. In the seeds the weight of the integument in relation to the kernel varies from 54.5 to 66 %, that is a maximum difference of 11.5 %. It may be generally said that the largest seeds have the greatest percentage of kernel.

The oil content of the kernels (dried in an oven) of the fruit analysed at the stations varied from 53.97 to 66.31 %, a maximum difference of 12.34 %. The oil content of the entire seed (dried in the air) varied from 28.07 to 40.62 % and that of the entire fruit from 16.23 to 24.33.

In Table X will be found the most significant results obtained in the course of researches on 10 trees 18 years old, on 5 trees 9 years old (A-E) and on 3 trees 8 years old (F. G. and H.).

TABLE X. — *Analyses of fruits of A. Fordii made at Gainesville.*

Tree	Fruit (dried in the air)		Seed (dried in the air)		% of oil		
	% of seed	% not seed	% of kernel	% of integument	Kernel dried by fire	Seed (dried in the air)	Fruit (dried in the air)
1	62.6	37.4	59.6	40.4	60.92	34.26	21.45
2	63.0	37.0	59.9	40.1	58.50	32.18	20.27
3	55.0	45.0	65.3	34.7	60.89	37.31	20.52
4	63.6	36.4	58.9	41.1	62.08	34.74	22.09
5	58.6	41.4	57.4	42.6	58.48	31.68	18.56
6	63.0	37.0	62.6	37.4	59.11	34.52	21.75
7	63.1	36.9	63.3	36.7	59.34	35.42	22.35
8	54.5	45.5	65.1	34.9	0.65	36.32	19.79
9	60.7	39.3	56.0	44.0	53.97	28.07	17.04
10	60.9	39.1	66.0	34.0	60.54	35.67	21.72
A	63.3	36.7	61.5	38.5	60.14	33.65	21.30
B	50.2	49.8	62.5	37.5	55.51	32.49	16.31
C	60.6	39.4	54.5	45.5	56.52	28.80	17.45
D	66.4	33.6	63.6	36.4	58.43	33.30	22.11
E	61.0	39.0	62.8	37.2	58.97	34.33	21.06
F	57.5	42.5	60.9	39.1	58.27	33.96	19.53
G	62.2	37.8	59.9	40.1	60.15	33.66	20.94
H	53.5	46.5	61.1	38.9	56.63	32.95	17.63

In Table XI will be seen the yield in fruit of the same trees from 1927 to 1932.

TABLE XI. — *Yields in fruits.*

Trees	1927		1928		1929		1931		Total for the years	
	lbs.	oz.	lbs.	oz.	lbs.	oz.	lbs.	oz.	lbs.	oz.
1.	17	8	14	5	37	6	38	1	107	4
2.	55	0	25	8	89	12	72	8	242	12
3.	13	0	2	7	4	14	14	0	34	5
4.	20	0	22	11	31	0	30	12	104	7
5.	5	0	4	8	4	6	7	10	21	8
6.	50	0	11	5	66	14	64	1	192	4
7.	15	0	5	4	35	12	19	3	75	3
8.	48	0	23	5	39	5	38	9	149	3
9.	90	0	84	12	141	11	164	13	481	4
10.	14	0	9	2	5	9	23	6	51	8
A.	1	12	11	9	27	6	40	12	81	7
B.	0	3	4	3	16	14	7	13	29	1
C.	2	15	5	12	16	14	21	12	47	5
D.	4	1	9	8	20	0	44	5	75	14
E.	7	4	12	1	16	3	26	6	61	14
F.	5	14	8	9	24	11	55	9	94	11
G.	6	6	5	0	34	15	58	2	104	7
H.	3	4	2	15	8	6	15	9	30	2

Certain trees, from the age of 7 years, have given a yield of more than 2 gallons of oil (9 litres) making 200 gallons (900 litres) per acre, but these yields are not usual and for trees 10 years old, a yield of 50 gallons per acre (227 litres) is what should be expected and is sufficient to make the plantation remunerative.

Oil extraction. — The Americans, following B. E. WILLIAMSON, have studied the problem of oil extraction which should be done as economically and completely as possible. The same methods and materials have been used as for other vegetable oils. The use of the hydraulic press has not been considered satisfactory as the cake retains too much oil (15 %) and the oil warps the scour tins too rapidly. Extraction by volatile solvents has also been abandoned as it was found that the oil acquired the consistency of lard owing, no doubt to the simultaneous extraction of foreign substances.

At present the Anderson expeller is used for extraction. This apparatus grinds continuously the fruits previously dried and decorticated and gives an oil which is almost colourless and practically neutral. The installation is situated near Gainesville and is capable of working all the fruit gathered in that region; it costs 15 000 dollars and can produce 50 gallons (227 litres) of oil per hour. Approximately 1 400 kilos of fruit per hour are required to feed the apparatus. The cake obtained contains very little oil and has a certain value as a fertiliser.

Diseases and pests. — It appears that the Chinese wood-oil trees introduced into America have not brought with them the diseases and pests commonly met with in China.

At the present time three diseases are known; a disease of the roots caused by a Nematode (*Heterodera radicicola* Atkinson), a cryptogamic disease, and a bacterial disease caused by *Bacterium Aleuritides*, n. sp.

Aleurites also harbour the scale insects, *Icerya purchasi* Mask. and *Aspidiotus lataniae* Sgn.

(8) SOUTH AMERICA.

The experimental cultivation of *Aleurites* has been undertaken in various States of South America.

(A) Brazil.

The Department of Agriculture of Brazil has procured seeds of *Aleurites* from China and Florida and distributed them so as to acclimatise these trees. The first results were good.

There are plantations of *A. Fordii* in São Paulo and Minas Geraes where some are at present flowering.

The Technical Agricultural Section of the Cacao Institute of Bahia procured seeds of *A. Fordii* in 1932 which were sown at the General Experiment Station at Agua Preta in order to obtain shade trees for the cacao trees and to associate the two cultivations. The seeds germinated well and the plants grew vigorously. The trees tended to lose their leaves in winter.

In 1934 seeds of *A. montana* from India were also sown at Agua Preta. The results are not yet known.

Plants of *A. cordata* from seed procured in Russia were also associated with cacao trees. The results are satisfactory.

The technical section of the Institute of Bahia imported seeds of *A. trisperma* with the idea that this species would succeed as it requires more or less the same climatic conditions as *A. moluccana*.

Finally, in Brazil there exists another species of *Aleurites*, namely, *Aleurites pentaphylla* which gives a drying oil suitable for replacing linseed oil. It is found in isolated stands in the cacao region. The Technical Section of the Institute of Bahia has made researches on this species and has established an experimental plantation at the general crop station at Almada.

(B) Argentina.

The most important centres of cultivation of *Aleurites* in Argentina are situated in the provinces of Misiones and Corrientes and in the north of the province of Entre Rios.

The largest plantations are those of San José and Pindapay in the province of Misiones. They possess more than 50 000 trees which have grown very quickly and in most cases have fructified.

(C) Paraguay.

The principal plantations in Paraguay are those of the Paraguay Central Railway. The others are small and contain an average of only about a hundred trees in each.

In this State there are more than 50 000 trees.

Analysis of fruits of *Aleurites* of Paraguay, made by Dr. MANIUCH, gave the following results :—

Weight of fruits 32.2-13.4 gm ;	Percentage of seeds in the fruit : 40 %
average 22.6 gm	Oil content of kernels : 52.5 %
Average weight of seeds : 2.89 gm	Oil content of fruits 18.12 %
Average number of seeds per fruit :	
4-5.	

(9) U. S. S. R.

Industry in the U. S. S. R. at present shows a great interest in Chinese wood-oil and is ready to employ it in the various branches. The Government has been induced to make experiments in growing *Aleurites* in places where the climate seems most nearly to approach that of the places of origin of Chinese wood-oil trees.

Investigations were made with both *A. Fordii* and *A. cordata* in the following regions:— on the Caucasian coast of the Black Sea, in West Transcaucasia, in the district of Poti in Georgia and in 8 plantations in West Georgia.

(4) Trials made on the Caucasian coast of the Black Sea.

Tests were made here with *A. cordata*. The first attempts at cultivation on the Caucasian coast were made at Tchaqua in 1896. The necessary material was partly provided by the expedition of Prof. Krasnoff on his return from India, Ceylon, China and Japan. A group of trees are also grown in the Botanical Garden of Batoum. At present there are 200 fine, healthy trees 33 years old. They reach the height of 8 m. The branches of the tree form a kind of tent. The larger branches are found at a height of 2 to 3 m, the trunks have a diameter of 20 to 25 cm, the bark is a dark greyish colour. The trees flower every year and bear fruit, although during the last ten years the yield had diminished by half, that is, from 20-30 kg to 10-15 kg. Up to the present the fruits have not been utilised though the local population has discovered and appreciated their therapeutic qualities.

The trees planted in a birch wood have produced several thousands of young plants of very good quality which sell for 25 roubles per hundred. An expert, KOROLEFF, states that it is easy to multiply *A. cordata* by budding.

Analysis of the seeds has given the following figures :— average percentage of integument in the seed, 33.5 % ; average percentage of kernel in the seed, 66.5 % ; weight of 1000 seeds, 966 gm.

The kernel contains 39 % of fat.

In 1932, in a plantation of a hectare, the following production of oil was obtained in kg according to the age of the trees :—

Age in years . . .	5	8-10	11	12	15-16	16-25	30	40
Quantity of oil per hectare (in kg.) .	24	144	255	590	860	871	1001	1000

In 1931 seeds of *A. cordata* were distributed to 10 growers; they were sown on 5 March, 1932. The following percentages of germination were obtained:— 25 April, 15 %, 5 May, 20 %; 8 May, 8 %; 1 June, 2 % 7 July, 3 %; 5 August, 1 %. A total germination of only 57 % was obtained.

This poor result was perhaps due to the fact that the seeds had been put in water to increase the fermentation of the seed coat. In 1932, 1500 kg of seeds were collected.

(B) Tests made in West Transcaucasia.

Experimental cultivation of *A. cordata* was commenced in this region much later than at Tchaqua, if a single *A. cordata* is not taken into account which was planted in 1905 at the botanical garden of Soukhoun. Although the place was not well chosen on account of water in the sub-soil, this tree has been very resistant to the severe winters of 1907-1908 and 1928. In 1930 it had reached the height of 9 m. and differed from the trees of Tchaqua in its pointed shape and oval crown.

The real trials were commenced in 1925 at Soukhoun. The first seeds were received from Tchaqua and the trees planted in 1927. They grew well and flowered in 1931. The first harvest of fruit, which was fairly large, was gathered in 1933.

In 1929, four specimens of *A. cordata* were planted on level ground at Gulripche from seed obtained at Tchaqua in 1928. The young trees grew rapidly. In the autumn of 1931 their trunks measured 5 cm in diameter and fruit was gathered for the first time in the same year. In 1932 several kilos of seed were obtained.

In 1930 sowing again took place with a part of the seed from Tchaqua. The young plants were transplanted in the neighbourhood of Soukhoun. In November 1932, they had reached the height of 165 cm in the plains and 120 in the hills (at an altitude of 180 m.). Another part of the same seed was sown at Gulripche in 1931 in heavy clay soil to which sand had been added. The plants developed slowly and flowered in 1932, but bore no fruit.

In 1930 the Varnish and Paint Company organised plantations of *A. cordata* in 9 regions in West Transcaucasia, namely:—

- | | |
|------------------------------------|--|
| (1) District of Gagry | (5, 6 and 7) Neighbourhood of the town of Otchemtchiri |
| (2) District of Gudauty | |
| (3) District of Soukhoun | (8) District of Gall |
| (4) Experimental field of Soukhoun | (9) Byrzk Hills (in the neighbourhood of Soukhoun). |

All these places, except two, are situated at an altitude of 300 m. The majority of plantations are on the slopes of hills. The hard winter of 1931-1932 reduced the number of trees considerably. In Table XII will be found the results obtained in the most typical plantations.

TABLE XII. — *Condition of Aleurites cordata planted in April 1930 by the Varnish and Paint Company.*

Districts	Number of trial plots	Trees dead during the summer of 1930	Trees left standing at the beginning of the following winter	Trees dead during the winter	Crowns frozen	Trees frozen at the collar	Number of sound trees	Number of trees added in spring	Average height in cm.	Maximum height in cm.
1) Mountains of Byrzsk (Soukhom). Plantation made in a forest, altitude 300-320 m. On a slope of 15-25° exposed to the N. Clay soil rich in humus . .	43	8	35	4	31	—	—	12	38.8	65
2) Djegherda. Altitude 150 m. Along a ridge facing S. Clay soil. . .	48	10	38	7	5	—	26	17	65	122
3) Arasadykhi. Altitude 350 m. Along a ridge facing S. Heavy clay soil originating from a chestnut wood. Plantation is protected on 3 sides by mountains .	49	3	46	4	—	—	42	7	73.4	143
4) Otraduce (Gagry). Altitude 15-20 m. On the N. W. slope protected from the N. by mountains. Heavy clay soil.	50	8	42	8	—	—	34	16	41	84

The trees which were injured were cut down almost to the roots and in the following year had thrown out new shoots.

Experimental cultivation of *A. Fordii* in Transcaucasia was begun in 1929 at Abkharia (Soukhom). The seeds came from Hong-Kong and Florida. The young plants were transplanted in the arboretum of the Experiment Station of Soukhom in light, pebbly, clay soil with various exposures; west, south and north-west. The plantations were situated at an altitude of 100 to 150 m., also at only 10 m. Only the trees planted at an altitude of 10 m. suffered a little from cold. They afterwards developed rapidly and in the fourth season had reached a height of 4 m. In the fifth season, in 1933, they were 5 m. high and had given the first semi-industrial harvest, namely, 7-8 kg of fruit per tree.

In 1932, 1000 seeds of *A. Fordii* were received from Florida and tests were made in a cold glass-house and in an orangery. It was found that:—

- (1) a covering of sand is less satisfactory than one composed of a mixture of sand and humus as the latter is warmer;
- (2) seeds should be sown under glass, even in May;
- (3) the seeds should not be sown too deep, 2 to 3 cm is sufficient;
- (4) seeds should not be soaked in water before sowing;
- (5) seeds sown in a cold glass-house germinate in two or three weeks while out in the open they require 1 to 2 months to germinate and even more.

The young plants, transplanted in fertilised soil and exposed to the sun, reached the height of 1 m. in the first season, while those planted in the shade did not exceed 15 to 20 cm in height. During the second season the trees grew from 1 to 3 m.

Tests were also made with *A. montana*. Variable results were obtained at Soukhoum, good on the southern slope, but at low altitudes the trees always suffered from cold.

(C) Trials carried out in Georgia.

According to the reports by the Experimental Agricultural Institute of Georgia experimental plantations of *A. cordata* were made in the following places in the district of Poti:— Supsa, Poti, Zina-Gola, Anaklia, Ilori, Peciora, Sariat-chiconi, Ketilari. Fifty trees were planted in each plantation. The results obtained will be found in Table XIII.

In April, 1930, 8 experimental plantations of *A. cordata* were also established in western Georgia in the following localities: — Lantchhuty, Tchokhataouri, Abacha, Koutais, Adjameti, Salkhino, Zougddi, Tchkadouachi, The results will be found in Table XIV.

In Eastern Georgia, in the same period, experimental plantations were made in the five following localities: — on the banks of the river Lopoto, at Quareli, on the left bank of the river Alasan, on the left bank of the river Jori, and at Melissa, in a nursery. Results are given in Table XV.

From all these tests the following conclusions may be drawn:—

- (1) *A. cordata* may be considered completely acclimatised on the Caucasian coast of the Black Sea.
- (2) Seeds of *Aleurites* lose their germinal capacity at the end of a year.
- (3) *Aleurites* are tolerant in regard to soil conditions. They grow in warm soils and low lying land, but they do not resist stagnant water.
- (4) Young trees of *A. cordata* grow rapidly and at 2 to 3 years old the branches are well developed. The leaves fall during the months of November and December.
- (5) The cultivation of *A. Fordii* and *A. montana* is of great value for the Caucasian coast of the Black Sea.

In order to improve the yields of *A. cordata*, Prof. VORONZOFF, of the Botanical Garden of Batoum, made investigations to determine the best epoch for gathering the fruit of this *Aleurites*. He arrived at the following conclusions:—

(1) The fruit of *A. cordata* ripens at the end of September and beginning of October. Maturation is characterised by the change in the colour of the fruit (from green to orange-yellow).

TABLE XIII. — *Condition of Aleurites cordata planted in the district of Poti by the Experimental Agronomy Institute of Georgia in 1930.*

Districts	Number of trial plots	Trees dead during the summer of 1930	Trees standing at the beginning of the following winter	Trees dead during the winter	Crowns frozen	Trees frozen at the collar	Number of sound trees	Number of trees added in spring	Average height in cm	Maximum height in cm.
1) Neighbourhood of Supsa. Level land, swampy soil, slimy. Altitude 18 m. Annual rainfall about 2000 m.	50	33	17	—	—	—	117	—	58	68
2) Poti. Level land, sandy soil of alluvial origin. Altitude 10 m.	50	20	30	3	9	2	16	—	87	97
3) Zina-Gola. Level land, sandy-podzolic. Altitude 40 m.	50	32	18	13	5	—	—	—	59	66
4) Anaklia. Level land, clay-sand, slightly marshy. Altitude 12 m.	50	5	45	—	—	—	45	—	104	195
5) Ilori. Level land, podzolic-red earth. Altitude 10 m.	50	3	47	—	—	—	47	—	98	17
6) Peciora. Level land. Altitude 15 m.	50	30	20	—	—	—	—	—	—	—
7) Siriatchiconi. Marshy land	50	30	20	—	—	—	—	—	—	—
8) Ketilari. Altitude 20 m. Soil podzolic-marshy .	50	10	40	—	—	—	—	—	—	—

(2) The fruit should not be gathered before it changes colour as during this period fats are still accumulating in the kernel, and 25 % of oil may be lost by premature gathering.

(3) Fallen fruit should not be left on the ground as fermentation can change the composition of the oil.

The best method of harvesting the fruit is to examine the trees on which fruit is ripening every 2 or 3 days and gently to tap the trunk so as to cause the ripe fruit to fall.

TABLE XIV. — *Results of trials in planting Aleurites cordata in West Georgia.*

Districts	Number of trial plots	Trees dead during the summer of 1930	Trees left standing at the beginning of the following winter	Trees dead during the winter	Crowns frozen	Trees frozen at the collar	Number of sound trees	Number of trees added in spring	Average height in cm.	Maximum height in cm.
1) Lantchhuti. Level land, clay, slightly swampy. Rainfall 1500-1700 mm. Altitude 20 m. . . .	50	3	47	4	28	12	—	17	55.4	103
2) Tchokhataouri. Level land podzolic-red earth. Rainfall 1250-1500 mm. Altitude 150 m. . . .	50	6	44	6	20	—	18 (40 %)	12	60.8	107
3) Abacha. Level land, podzolic-glacial. Rainfall 1200 mm. Altitude 25 m.	50	10	40	5	19	—	16 (40 %)	18	90.5	135
4) Koutais. Level land, podzolic-clay. Rainfall 1250 mm. Altitude 140 m.	50	8	42	4	10	16	12 (28 %)	—	61.8	109
5) Adjameti. Level land, clay-podzolic. Rainfall 1250 mm. Altitude 130 m.	50	20	30	3	9	6	12 (40 %)	26	42.4	98
6) Salkhino. Level land, clay. Rainfall 1250 mm. Altitude 200 m. . . .	50	2	48	8	26	14	—	—	54	96
7) Zougdid. Level land, podzolic. Rainfall 1250 mm. Altitude 110 m. .	50	24	26	13	—	13	—	—	90	182
8) Tchkadouachi. Land on a hill slope of 5° facing S. W. Typical podzolic-red earth. Rainfall 1250-1500 mm. Altitude 250 m.	50	7	43	4	—	—	39 (90 %)	11	82	140
Average . . .	50	10	40	6	14	7.6	12.1 (30 %)	10.5	67.1	124

(10) GENERAL CONCLUSIONS.

The following general conclusions may be drawn from the tests made in the various parts of the world in *Aleurites* cultivation.

(1) *A. Fordii* is a completely sub-tropical tree and is therefore difficult to grow in tropical countries where the temperature does not fall during the winter.

(2) For experimental cultivation in new countries a sufficient quantity of fresh material should assured.

(3) The culture of *A. Fordii* can be assured if the trees bear their first fruit fairly soon (after 3 or 5 years).

(4) The only certain method of verifying the suitability of land for this cultivation is by "geographic" plantations, as frequently disappointments arise from theoretical calculations.

TABLE XV. — *Results of trials in planting Aleurites cordata in East Georgia.*

Districts	Number of trial plots	Trees dead during the summer of 1930	Trees left standing at the beginning of the following winter	Trees dead during the winter	Crowns frozen	Trees frozen at the collar	Number of sound trees	Number of trees added in spring	Average height in cm.	Maximum height in cm.
1) River Lopoto. Altitude 300 m.; old land, alluvial origin, slightly podzolic	50	8	42	23	19	—	—	31	200	245
2) Quareli. Altitude 350 m; clay soil-alluvial origin.	50	20	30	10	20	—	—	—	29	100
3) Left bank of the river Alasan. Altitude 250 m. clay, slightly marshy.	50	46	4	4	—	—	—	—	—	—
4) Left bank of the river Jori. Altitude 300 m; dark brown soil . . .	50	43	7	—	7	—	—	13	29	—
5) Melissa. Altitude 270 m. dark brown soil . . .	50	completely destroyed by pests								
Average . . .	50	29.3	28.8	9.3	11.5	—	—	11	64.5	86.3

(5) In countries with a sub-tropical climate *A. cordata* may also be cultivated and some types of *A. montana*. There is no possibility of the tropical species, *A. moluccana* and *A. trisperma* succeeding in sub-tropical regions.

(6) The best conditions for cultivating *A. Fordii* have been found in places where tea plantations already exist.

(7) *A. Fordii* can resist rigorous climatic conditions and gives good harvests even in shallow soils.

(8) Before inviting investment to supply the capital required for establishing plantations it is necessary to wait until the results of the tests in progress determine what regions are suitable for cultivating *Aleurites* and where this cultivation can be remunerative. Information is required on the growth of trees, on the age at which they can produce commercially, the average number of fruits borne by each tree, their yield in oil and the value of this oil. In this respect it must be determined whether the oil of *A. montana* is equal to that of *A. Fordii*, as will be attempted in the second part of this article. This

information can only be obtained by establishing experimental plantations where the trees are supervised until they produce. Until these fundamental studies are complete it will be impossible to establish a project in which commercial success in the large plantations could confidently be assured.

J. LEGROS.

PRESENT STATE OF THE DAIRYING INDUSTRY IN VARIOUS COUNTRIES: (2) ITALY (*)

The Italian industry of milk and milk products occupies a remarkable place in the economy of the nation both for the quantity and quality of production and for the considerable contribution it makes to the export trade. The most important activity of this branch of production is the manufacture of cheeses which represents the principal method of utilising milk in the regions of greatest production such as, Lombardy, Piedmont, Venetia, Emilia, Latium and Sardinia. In the first three of these regions this industry is practiced the whole year round, in Emilia chiefly in the period from March to November, in Latium and Sardinia especially in the period from the beginning of winter until the end of spring.

Besides this principal industry and following the increase in milk production and the improvements introduced, the production of butter, and preserved milk, either sterilised, condensed, dried or powdered has also become of greater importance during the last few years. Also the utilisation of milk by-products has developed considerably in respect to lactose, lactic acid, lactates and, recently, casein, in the numerous applications both alimentary and therapeutic and in the manufacture of dyes and the preparation of plastic materials.

It may be said that milk production in Italy is today integrally exploited for the manufacture of different products and by-products. According to the most recent estimates assembled by the National Fascist Federation of Milk, Milk Derivatives and Allied Products there are at present about 10 000 undertakings, large and small, engaged in the industrial utilisation of milk products and by-products and about 30 000 workmen employed.

The value of milk production is estimated at about 3 milliards of lire, about one milliard of which is represented by milk intended for direct consumption by the population and for providing school children with milk and two milliards by milk for industrial use.

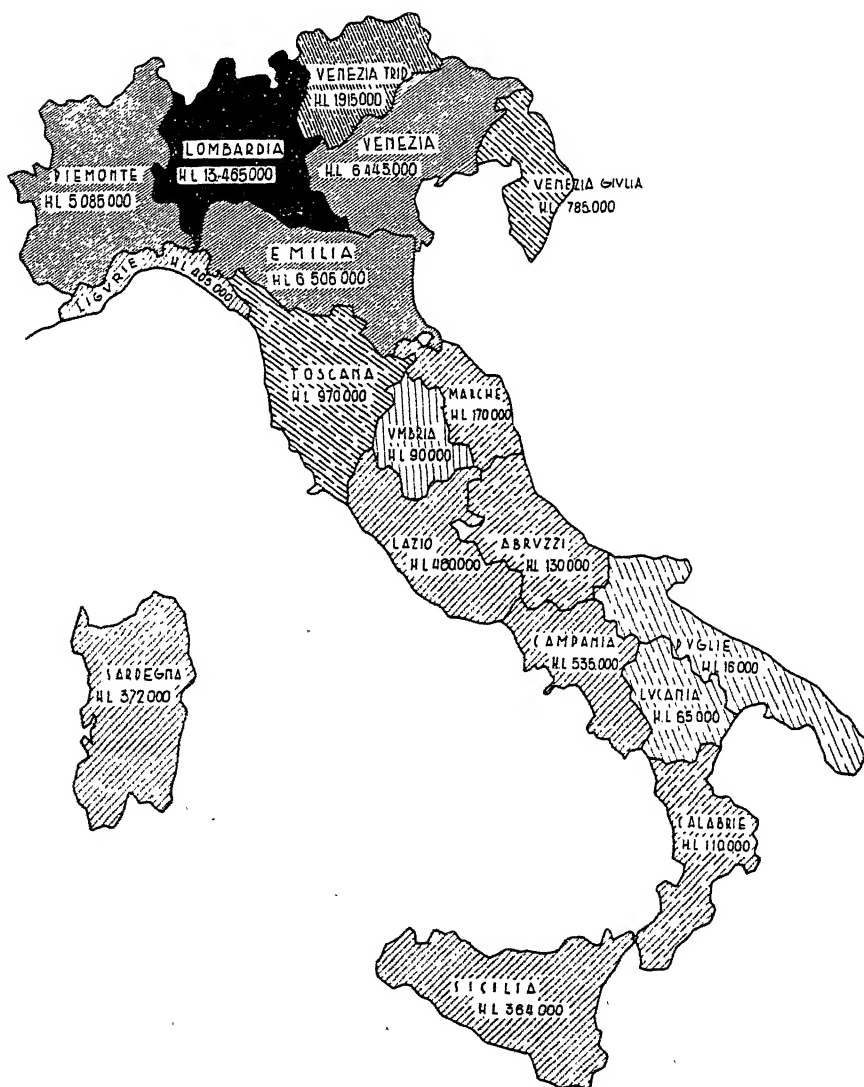
The entire production of milk, with the exception of that intended for feeding calves, lambs and kids, amounts to 42 540 000 hectolitres, of which 37 887 000 is cows' milk and 4 373 000 ewes' milk.

(*) The 1st article of this series, on France, appeared in this *Bulletin*, 1934, No. 11 pp.

Direct consumption absorbs 14 495 000 hl while 27 995 000 hl of the remainder is utilised in the industrial or home manufacture of cheeses and gives 438 020 quintals of butter and 2 308 740 quintals of cheese.

A milk chart of Italy is reproduced here which indicates the production of each of the regions, the darkest coloured being the most productive.

FIG. — *Milk production in Italy by regions.*



I. — DAIRYING SPECIES AND BREEDS.

The re-assessment of 19 March, 1930 (see Table I) gives an exact idea of the number of dairy cows, buffaloes, sheep and cattle in the 4 principal regions, each one having its' own particular conditions its' own breeds of cattle and its' characteristic cheeses.

TABLE I. — *Numbers of Dairy cattle in Italy.*

Regions	Dairy cows	Buffaloes	Total of sheep	Total of goats
Italy Northern	2 105 341	175	923 137	293 964
Italy Central	110 395	1 793	3 203 914	122 877
Italy Southern	80 527	13 179	3 356 682	730 425
The Islands	93 318	7	2 780 720	745 468
<i>Total . . .</i>	<i>2 388 581</i>	<i>15 014</i>	<i>10 268 119</i>	<i>1 892 736</i>

Northern Italy. — This is the part of Italy in which are found the greatest number of dairy cows (88.1 %). Lombardy holds the first place for numbers (653 644 dairy cows) and Milan is the province in which stock-breeding is most extensively practiced (149 497 dairy cows). In this province the district of Lodi possesses the largest number of dairy cows (53 636).

In *Central Italy* the proportion of dairy cows is 4.6 %, the greatest number being in Tuscany (65 635), Latium follows with 26 467 cows and, in addition, 3 203 914 sheep.

Southern Italy possesses 3.4 % of the dairy cows in the whole country. Here sheep and goats are the most numerous and it is here also that the greatest number of buffaloes are found.

The Islands. — The number of dairy cows is about the same in the two islands (3 % of the national total). Sardinia, however, has a greater number of sheep (2 054 138) and goats (436 202). Stock breeding is most extensive in Sardinia in the provinces of Sassari and Nuoro, and in Sicily in the province of Ragusa.

(a) BREEDS OF CATTLE.

The breeding of buffaloes, animals adapted to the marshy lands where no other domestic animal can survive, is on the downward grade following the work of land reclamation which was undertaken after the war. The few herds which still exist are localised in some parts of the provinces of Naples, but chiefly in Salerno, Foggia and Matera.

At present buffaloes which are considered worth reproduction are being raised in a semi-wild state.

With regard to *dairy cows*, some breeds exist in the valleys of the Alps which are appreciated for their milk production, these are: the *Valdostana* (Val d'Aosta), the *Ossolana* (Domodossola) and the *Rendena* (Trentino, Friuli) breeds. In the valley of the Po, the region where production is the highest, the *Brown Alpine* and the *Dutch Black Pied* breeds must be mentioned among the breeds specialised in milk production. In almost all regions in Italy where milk is produced *Brown Alpine* cattle are found in large or small numbers; in the valleys of the Alps, in Lower Lombardy, in Piedmont, in Venetia, Emilia, Sardinia and Sicily, in fact the *Brown Alpine* owe their popularity everywhere to their remarkable adaptability. In favourable surroundings they give yields which will bear comparison with any of those of the best milk producing breeds as proved by the fact that their average production is between 2 500 and 3 000 litres of milk per annum.

The *Dutch Black Pied* breed or *Friesian*, which is noted for milk production is fairly common in the province of Cremona, a region adapted to its development. It, however, is an exacting breed and does not adapt itself very easily to the conditions in all milk producing districts in Northern Italy. The *Black Pied* is the only breed of Dutch cattle known in Italy. They do not always give good results which are dependent on the choice of individuals and on feeding. It is certain that cattle of this breed, from which very high yields are expected, amounting to 35 to 38 litres in 24 hours, are subjected to very hard work which wears them out. Given selected cows and scientific feeding it is not difficult to obtain an annual average of 4 000 litres per cow of the *Dutch Black Pied* breed in Italy and certain of them give 6 000 and even 7 000 litres per annum.

Another type of dairy cows must be mentioned, that is the *cross-bred Swiss-Dutch* or *Dutch-Swiss* which are known by the name of «preti». They have shown themselves everywhere to be excellent milkers, robust and are preferred to pure-bred cows of the breeds from which they are derived.

In some parts of Friuli (Venetia) *Simmenthal* cows replace the red Friuli breed, but they are not very common. Here and there are also found a few not very noteworthy examples of the *Jersey* and *Normandy* breeds.

In Emilia are found the *Modena* (Modena) and *Reggiana* (Reggio Emilia), both breeds serving a triple purpose and at the same time giving good milkers. Among the breeds serving a triple purpose the principal is the *Reggiana* fawn coloured breed; certain of which give a good milk yield. Some cows of this breed give as much as 27 litres in 24 hours while others do not give more than 10 litres.

In Piedmont the *Piemontese* and its sub-breeds should be classed among the best Italian breeds serving a triple purpose. Their colour is generally deep cream, sometimes nearly white or pale grey.

In Central and Southern Italy the *Brown Alpine* bull is usually employed. In Sicily there is the *Modicana* breed. The milk yield is very variable, not only between breeds, but also between regions. The highest yields are found in the districts exclusively occupied in milk production.

(b) BREEDS OF SHEEP.

Italian breeds of sheep generally serve a triple purpose. Some are characterised by the production in meat and wool such as the *Bergamasca* (Lombardy), the *Garessio* (Piedmont); others by their milk production such as the breeds of *Langhe* (Piedmont), *Puglia* and *Lecce* and Sardinia.

The *Langhe* breed is the best from the view point of milk production, giving from 300 to 350 kg in about 200 days. The ewes' of Sardinia give an average of 200 litres.

The breeds serving a triple purpose such as the *Gentile Puglia* and the *Sopravissana* give a yield of 50 litres. Other breeds give a lower yield.

(c) BREEDS OF GOATS.

Southern Italy is a favourable region for goat breeding, which however, it is on the decline even in districts where it is habitually practiced. The principal breeds are the *North Alpine*, the *Manarola* and, in the south, the *Maltese*.

The yield is very variable and it is not possible to obtain more than 200 litres of milk.

II. — LIQUID MILK.

Although in Italy, a country favoured by its abundant production of fruits, vegetables and wine, the consumption of milk for food purposes is not as great as in countries in the north of Europe, it is constantly on the increase. The highest consumption is in Northern Italy and diminishes in Central Italy, arriving at the minimum in the South. A certain progress, however, may be noted in this respect as this consumption, which in 1930 was 25 litres per annum per capita had risen to 34 litres per capita in 1933. The region where most milk is consumed is Venetia Giulia where the average consumption is 131 litres per annum per capita, followed by Venetia Trentina with 75 litres, Lombardy with 60 litres, Venetia Giulia with 53 litres and Piedmont with 51 litres. In the other regions the average is 40 to 53 litres until the lowest figures are arrived at in Sicily, Calabria and Lucania with an average of 6 litres and Puglia with 4 litres.

Milk for food purposes is sold as *raw milk* and *pasteurized milk* by the Milk Centres the number of which is increasing rapidly.

In Lombardy the consumption of liquid milk is becoming increasingly general.

Pasteurized milk for food purposes is produced in the Milk Centres some of which, as in Milan and Rome, have an output of more than 2 000 hl per day and may be considered among the most important in Europe. The others are at Naples, Monza, Busto Arsizio, Varese, Legnano, Verona, Vicenza, Asti, Terni, Parma, Mondovì, etc.

The methods most commonly used are low temperature (63° C for 30 minutes) pasteurization and disk pasteurization. The thin layer method is also being introduced. The milk is bottled everywhere.

III. — BUTTER PRODUCTION.

Italy produces annually about 500 000 quintals of butter. This production is chiefly localised in Northern Italy, to be more precise, in Lombardy and Emilia. The production of butter is also high in Venetia.

In Lombardy are found establishments possessing the most up-to-date installations, where all kinds of butter are made, including that obtained from pasteurized cream, and fermented products obtained with selected ferments. The introduction of separators into Northern Italy, chiefly after the war, has resulted in higher yields in butter.

Three qualities of butter are regularly made: centrifugated sweet or fermented butter of standard quality, delicate flavour, and good keeping qualities, sweet cream butter made from cream skimmed off the milk, and fermented butter also made from skimmed cream acidified with selected cultures.

In the South of Italy butter is sometimes enclosed in an envelope, in the form of a flask, of curdled milk, fermented and flaked for this purpose, called flaky curd. This product is known as "manteca".

Excellent butter is also obtained with set cream in places where dry cheese of the Parmesan type are made. Technical information on the scientific making of butter has been increasing diffused during the last few years and at the present time, principally owing to the Experimental Dairying Institute of Lodi and to which is also owed the institution of dairies.

A recent law (Royal Decree of 6 April 1933 No. 381) made it compulsory to sell butter retail in blocks not larger than 1 kg and wrapped in paper on which is printed the name and address of the manufacturer and the net weight of the contents. The packet must also be hermetically sealed.

Another law (Royal Decree of 15 February, 1934 No. 290) prohibits the use of butter substitutes, such as margarine, for food.

IV. — CHEESE PRODUCTION.

The production of cheese has always been of great importance in Italy. At the time of the Roman Empire cheeses made from ewes' milk called "pecorini" of Umbria and the district of Luni were already celebrated and the dry cheeses of the Parmesan and Gorgonzola type have been well known ever since the Xth century.

Cheese making in Italy developed considerably after 1870. Many new foreign markets were found and the export of cheese became of increasingly greater importance after 1910 and after the stoppage imposed by the European war of 1914. In fact, if Italy occupies the seventh place among milk producing countries of the world, she is in the first rank as a cheese producing country, the annual production amounting to 2 500 000 quintals and including about a hundred varieties differing greatly from each other in their methods of manufacture, their organoleptic characters, duration of maturation and form. These products have retained their place so well in the foreign cheese market that,

even at the present time, so bad for the cheese industry in general, Italy has been able to retain her place as the fourth exporting country, ranking after the Netherlands, New Zealand and Canada.

The varieties of cheese are in relation to the physical configuration of the country, the climate, the pasture land of the Alps and Apenines and plains which gives the milk of each region its particular characteristics which are transmitted to the cheese, and by methods of manufacture that have evolved during the centuries.

The names of Gorgonzola, Pecorino Romano, Caciocavallo, Bel Paese, Quartirolo, Fontina, Montasio, Canestrato, Fiore Sardo, are among those best known in the international cheese trade.

Cheese is made in all parts of Italy, but chiefly where there is an abundance of milk and where tradition, methods of manufacture and reputation have made it the principal industry of the district.

The Alpine region produces three principal types of cheese: in Piedmont, *Fontina* which possesses all the best qualities of a high class cheese; in Lombardy, *Bitto* and in Venetia, *Montasio* which greatly resembles *Fontina* and is chiefly made in Friuli. In Vicentino and Basso Trentino, *Asiago* and *Vezzena* are still made. In the Padua valley, the most important centre of this industry, all the cheeses are made which are best known on the market including types of cheese of other regions and other countries. The production of soft curd cheeses is remarkable and special mention must be made of *Gorgonzola*, *Bel Paese*, *Stracchino*, *Robiola*, etc., though the manufacture of hard cheeses, having a ripening period more or less prolonged, is even greater. All these cheeses are made with cows' milk. The principal are: *Grana* cheeses with the types *Lodigiano*, and the *Reggiano* and *Parmigiano*.

In Central Italy the production of cheeses with a cows' milk basis is much less developed. In Latium and neighbouring regions ewes' milk is used industrially principally for the production of *Pecorino Romano* and other types such as *Pecorino Grossetano* and *Pecorino d'Urbino* which differ from *Pecorino Romano* in shape and also have a softer curd.

Similar characteristics to those of Central Italy are found in the cheese industry in Sardinia where not only is *Fiore Sardo* (the most appreciated type of Pecorino) produced at present, but also a *Pecorino* resembling the *Romano* and which represents about two thirds of the total production of *Pecorino* in Italy.

In Southern Italy and Sicily there is also a large production of cheese with a ewes' milk basis, chiefly in the mountainous regions. Ewes' milk is used for making *Foggiano* in Apulia, also in Calabria and Lucania for making *Cotronese* and *Moliterno*, and in Sicily *Incanestrata* is made with a mixture of ewes' and cows' milk. In the more fertile districts and in the plains the production of cheese with a cows' milk basis is especially developed for *Caciocavallo*, *Provolone*, *Siciliano*, *Scamorza*, *Burello*, *Manteca*, etc.

The production of *Mozzarella* and *Provatura*, made with buffaloes' milk is also considerable.

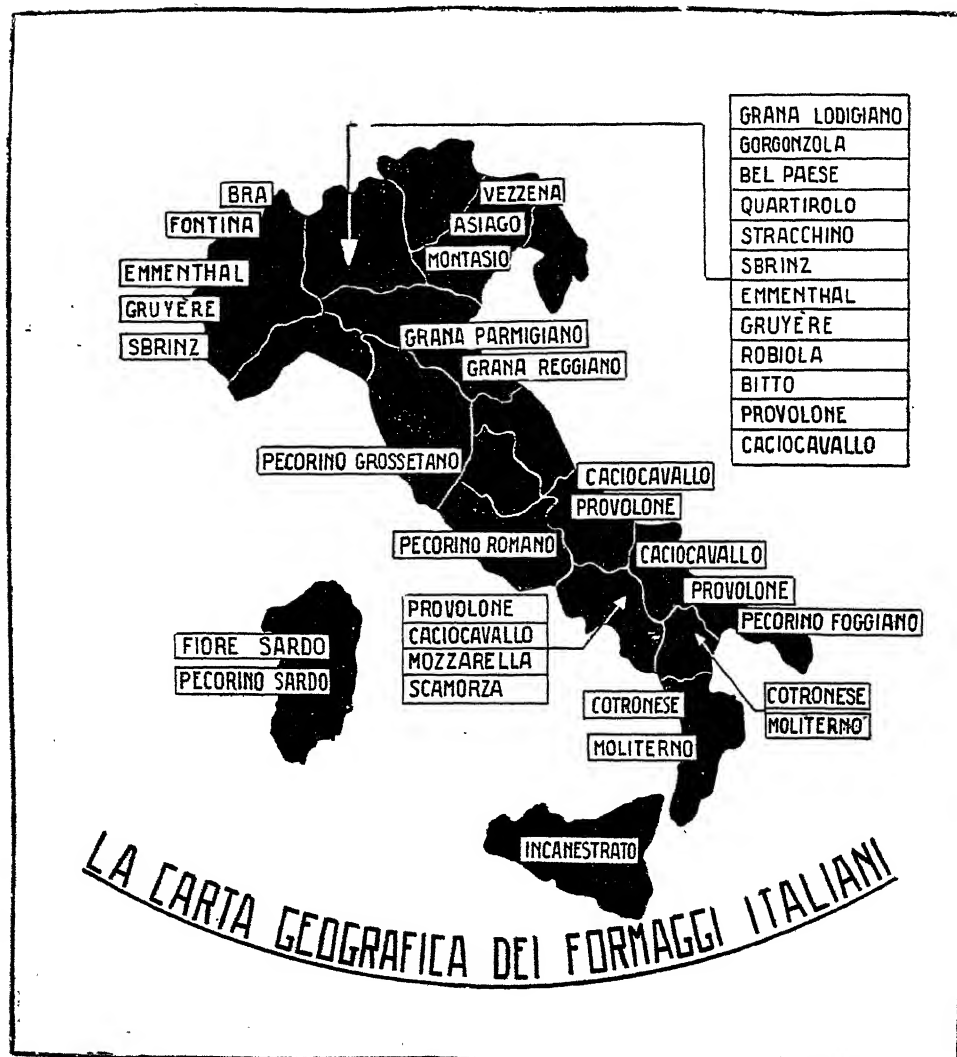
FIG. 2. — *Chart of cheese production in Italy.*

Plate kindly lent by the "Comitato Nazionale Italiano per il Latte e i suoi Derivati".

(I) PRINCIPAL TYPES OF CHEESE PRODUCED IN ITALY.

With regard to methods of manufacture the cheeses are divided into uncooked, semi-cooked (that is, the cooking temperature is from 35 to 48° C.) and cooked cheeses (cooking temperature 48 to 56° C). Each of these groups are again divided into cheeses curdling naturally and those curdled with fermentation acids.

TABLE II. — *Italian Cheese Output Classified by Varieties, in 1933.*

Cows' Milk Cheeses . .	Grana (Reggiano - Parmigiano - Lodigiano)	85 000 metric tons
	Gorgonzola	41 000 " "
	Caciocavallo	20 500 " "
	Provolone	
	Incanestrato	
	Emmenthal style	9 000 " "
	Gruyère style	
	Fontina - Asiago - Bitto	4 500 " "
	Rel Paese, etc.	12 000 " "
	Ravaggioli	
	Crescenza	
Ewes' Milk Cheeses . .	Fresa	
	Pasteurized cheeses	39 000 " "
	Genuine Roman	
	Fiore Sardo	
	Foggiano	
Cows' or Ewes' Milk Cheeses	Grossetano	9 000 " "
	Incanestrato	
	Viset	
Other Varieties		220 000 metric tons

Among uncooked cheeses the best known are: *Robiolini*, *Robiola*, *Crescenza*, *Quartirollo*, *Ravaggiolo*, *Fresa* (ripening within a month); green and white *Gorgonzola* (ripening in 1 to 6 months); *Mozzarella*, *Scamorza*, *Provatura*, *Provola* (ripening early); *Provolone* and *Caciocavallo* (medium ripening).

Among semi-cooked cheeses must be mentioned, *Fontina*, *Bitto*, *Montasio Asiago* (medium ripening); and *Pecorino Romano* (slow ripening).

Among cooked cheeses the most important are the *Grana* types some of which, as for example *Lodigiano* require as much as 4 years to ripen; the *Sbrinz* and the *Emmenthal*, *Friburg* and *Gruyere* types (medium ripening).

Each of these cheeses has not only different methods of manufacture, but also different food characteristics. The following Table gives the principal characteristics of the various types of Italian cheeses.

(A) Uncooked cheeses, fresh and ripened.

The cheeses which curdle by natural acids and which ripen early include a whole range of very delicate table cheeses, resulting from modern methods of fabrication.

(a) *Fresh Cheeses*. — These are prepared with whole milk to which cream is sometimes added. They are small in size have a delicate flavour and an agreeable odour. They are consumed as soon as possible as they do not keep well, though they are sometimes salted to increase their keeping properties. The following cheeses are found in this category:—

Robiola della Valassina is prepared with ewes' milk. It contains an average of 45 % water, 30.5 % fat, 20 % protein substances and 3.7 % ashes.

TABLE III. — *Classification of Italian cheeses drawn up by G. Fascetti.*

Uncooked cheeses . .	Coagulated by natural acids	Early ripening (within a month)	Robiolini Robiola Crescenza Bel Paese & similar Quartiolo Raviggiolo Fresa
		Medium ripening (from 1 to 6 months)	Gorgonzola white & green
	Coagulated by fermentation acids	Early ripening	Mozzarella Scamorze Provature Provole
		Medium ripening	Provolone Cacio cavallo
Semi-cooked cheeses (from 35° to 48°).	Coagulated by natural acids	Medium ripening	Fontina Bitto Montasio
		Slow ripening (more than 6 months)	Pecorino romano
	Coagulated by fermentation acids	Medium ripening	Asiago
Cooked cheeses (from 48° to 56°)	Coagulated by natural acids	Medium ripening	Emmental Friburg Gruyère
		Slow ripening	Sbrinz
	Coagulated by fermentation acids	Slow ripening	Grana Reggiano & parmigiano Grana lodigiano

Robiolini di Montevicchia. — These cheeses are prepared with cows' milk to which is sometimes added goats' or ewes' milk.

Formaggini di Lombardia. — Similar to the above, but made solely with cows' milk.

Formaggini di Lecce made with goats' and cows' milk.

Tonnine made at Boves in Piedmont.

Casciotto a fiore of the Sabine hills and the region of Aquila, made with ewes' milk.

Mascherponi or cream cheeses contain an average of 44.5 % water, 47 %, fat, 78 % proteins and 1 % ash.

(b) *Cheeses salted and ripened.* — These are prepared with whole cows' or ewes' milk, salted and ripened for several weeks. The best known are:—

Stracchino de Milano which is prepared with whole milk. One hundred parts of milk give about 11 parts of ripe *Stracchino*. This cheese contains about 40 to 48 % water, 26 to 31 % fat, 20 to 22 % protein substances, and 3.6 % ash. There are other types of this cheese: *Stracchino due panne*, or double-

cream, which is made with milk containing a double quantity of cream; another type is made in Sardinia which is known as *Fresa*.

Crescenza is a *Stracchino*, square and very flat and thin in shape, produced in Lombardy. It contains about 60 % water, 20 to 25 % fat, 16 to 17 % protein substances and 3 to 4 % ash. Each form weighs from 1 to 2 kilos. One hundred litres of milk give an average of 15 kg of ripe *Crescenza*.

Bel Paese is made in Lombardy with whole cows' milk. It contains 50 to 51 % water, 25 % fat, 20 to 22 % proteins and 3 % ash. This cheese has a wide reputation both on the home market and abroad. It is a product with a sweet flavour, very buttery and characterised by the fact that the casein is very assimilable.

The shape is strictly standardised, each form weighing about 2 kg. Great care is taken in making the boxes in which it is packed which are light and practical.

Many other types of much appreciated table cheeses are now made in Italy; like *Bel Paese* they are called by registered fancy names, such as: *Fiore d'Alpe*, *Cacio Savoia*, *Bella Milano*, *Bella Alpina*, *Bel Piemonte*, *Vittoria*, *Bel Piano Lombardo*, etc.

Raviggiolo closely resembles *Crescenza* and is made in Tuscany with goats' milk.

Quartirolo comes from Lombardy. There is an active export trade in this cheese.

Fresa, made in Sardinia with cows' milk, has a sweet taste, agreeable and light.

Gorgonzola or *Stracchino di Gorgonzola*. — This celebrated Italian soft curd cheese which takes its name from the small town of the same name in the province of Milan where it was first made more than 7 centuries ago, is made today in the greater part of the milk centres in Lombardy and Piedmont. It is generally made in the autumn with fresh cows' milk. It is salted (4 % salt) and left to ripen for 2 to 6 months at a low temperature: 100 parts of milk give 9 to 12 parts of cheese.

Gorgonzola is cylindrical in shape, the weight is about 8 kg and it measures from 10 to 15 cm in height and about 20 cm in diameter.

Formerly this cheese was ripened in mountainous regions and places naturally cold and damp, but now industry has replaced nature by establishing curing houses for *Gorgonzola* equipped with large refrigerating apparatus worked by motor power which permit this cheese to be ripened even in the plains. Certain of these curing houses can contain as many as 50 000 cheeses.

There are three kinds of *Gorgonzola*, namely; *verde di prima*, *verde di seconda* and *bianco* or *butirroso* (that is, first quality green, second quality green and white or buttery). The type best known on the market is *Green Gorgonzola* or *herborised Gorgonzola*, but the white, soft type is also made in small quantities.

The characteristics common to the two types are its tenderness and buttery nature due to the very high content in fat.

Mozzarella. — This cheese is eaten when fresh and is a characteristic product of the cheese industry of the South. It is generally made with buffaloes' milk though cows' milk is now also used.

The weight is from 2 to 4 grammes each and the forms are irregularly spherical in shape.

Scamorza. — Also originating in Southern Italy and intended for immediate consumption. It is made with cows' milk or cows' and ewes' milk mixed. The forms are small, a long oval weighing from 1 to 2 grammes and having lappets to facilitate handling.

Manteca. — Is a species of *Scamorza* containing butter which, protected from the air, keeps fresh for a long time.

Bra. — This cheese takes its name from the village in Piedmont where it was originally made, though at present it is also manufactured in modern dairies where its fabrication has been improved. It is a medium sized cheese weighing from 5 to 7 kg, its colour is white, the structure compact and uniform, the flavour salty. It is used as a condiment.

Provatura or *Provola*, *Marzolina*. — These cheeses are made in central and southern Italy with buffaloes' or goats' milk. They are sometimes smoked. They contain 38 to 43 % water, 26 to 32 % fat and 20 to 21 % proteins.

Caciocavallo and *Provolone*. — The two types best known abroad are *Caciocavallo* and *Provolone* originating in the Campania, but now extensively manufactured in almost every province in Italy.

Their weight is between 2 to 6 kg and they differ in shape, the first being squeezed at one end and the second being pear-shaped. They are suitable for two purposes; at 6 months old they are excellent table cheeses; very ripe they constitute a much appreciated condiment. They can be kept for a long time and travel very well.

The following soft cheeses are also made with flaky curds.

(B). — Semi-cooked cheeses.

Among the semi-cooked cheeses mention must be made of *Fontina Montasio* and *Bitto*, products which are similar in technique and quality. The first is made chiefly in Piedmont (Val d'Aosta), the second in the valley of the Adda and the third in Friuli and also at present in Lombardy.

Montasio and *Bitto* when they are very fresh and made with whole milk are agreeable table cheeses. When old and made with slightly skimmed milk they are used as cheese for grating.

Another semi-cooked cheese is *Asiago*, first made in the Venetian commune of the same name in the province of Vicenza. It is still made in Venetia, in the Trentino, Lombardy and neighbouring regions.

On account of its pungent aroma it is wrongly called *Pecorino* of Asiago though it contains no ewes' milk and is of an entirely different shape which cannot be mistaken for the true *Pecorino*.

Pecorino Romano. — This cheese, as its name implies, is made exclusively of ewes' milk and is characteristic of the regions where pasture lands predominate and are particularly favourable to sheep-breeding.

Although originating in Latium, during the last 30 years its manufacture has been extended to Sardinia by the Roman dairy-proprietors, where at present

more than 50 % of the total amount is produced, and also to other regions in the South and to Tuscany.

The material used for making *Pecorino Romano* is a inedible cheesy curd which by a process of salting and ripening is converted into the finished product.

Ripening is at present done by the great societies which own large modern curing houses capable of containing tens of thousands of forms and which are chiefly found in the neighbourhood of Rome and in the provinces of Nuoro, Sassari and Cagliari.

The shape is cylindrical and the weight varies between 8 and 10 kg; it travels long distances very well especially when more than a year old. When less than a year old it is an excellent table cheese, but later acquires a particular and very pronounced flavour which increases with age — these cheese are not generally kept for more than two years — when it becomes a cheese for grating greatly appreciated by those who like a very piquant and aromatic flavour.

This cheese has acquired great commercial and industrial importance which permits the utilisation of pasture lands and flocks of sheep in Latium and Sardinia.

Among cheeses made with ewes' milk special mention should be made of *Cotronese* and *Moliterno* originating in Calabria and Lucania; *Foggiano* which is made in Apulia; *Pecorino Grossetano* and *Pecorino d'Urbino* small in shape, less piquant and with a slightly soft curd; *Fiore Sardo*, a good table cheese when not very ripe and an excellent condiment when aged.

Incanestrato Siciliano is made in Sicily from a mixture of cows' and ewes' milk.

(C) Cooked cheeses.

Grana Reggiano — *Parmigiano* — *Lodigiano*. — This type of cheese may be considered the most important of all Italian cheeses as they have enjoyed a wide reputation for many centuries and are still today held in high repute both as a product for seasoning, when fully mature, and as a table product.

The weight is between 25 and 30 kg and the shape that of a blackish coloured disk.

When opened the colour inside is pale lemon due to the addition of small quantities of saffron when curdled.

Grana Reggiano and *Parmigiano*, which are best known commercially, are made only from April to November with the milk of two milkings, the evening milk being set in metal pans and skimmed in the morning while the morning milk is generally not skimmed, or only very slightly, always using the same method.

The thorough stirring when curdling, the cooking at high temperature and the pressure insures the compactness of the products, its poverty in whey and therefore its slow ripening and good keeping qualities.

When the first stage of ripening is finished the Grana cheese is collected by the curer who is almost always the exporter and who possesses the necessary store houses capable of containing 1000 to 20 000 forms and consisting of large rectangular rooms well protected from the light and excessive heat. Here the cheeses are turned periodically and moved on the shelves and covered with linseed oil or wine-dregs until the curd is sufficiently mature.

Systems of *packing* vary according to the countries of destination and the distance. For short distances cylindrical rush baskets are used, with a lid, containing 1 to 5 cheeses. For abroad special packing cases are used and wooden barrels containing from 3 to 4 forms of equal size and weight.

Grana Lodigiano, on the contrary, contains less fat, ripens more slowly, and has larger eyes. The weight is also greater, being as much as 50 kg.

Its texture and quality make it a cheese for seasoning, but the best forms with moist, shining eyes, are excellent and are much sought after as table cheeses.

The studies made by C. GORINI have contributed greatly to the perfectioning of this product by the introduction, in 1933, of scientific methods of selecting ferments, with a special application to Grana cheeses.

In certain regions other types of cooked cheese have been made for some time such as, *Emmenthal*, *Gruyere*, *Sbrinz* or *Spalen*, etc.

With the exception of *Sbrinz*, which is a cheese for grating, these cheeses must be included among those for table use.

To all these must be added the *melted cheeses*, without rind, with either a mild or piquant flavour, which are known throughout the whole world on account of their keeping and travelling qualities due to being generally wrapped in metal paper and sold either in prisms weighing 1 to 2 kg or on rolls and small portions.

The types made up to the present principally resemble *Emmenthal* and *Sbrinz*. There also exist small portions of *Gorgonzola* and a special cheese called *Dolce Verde*, made by the "L. I. R." of Robbio.

V. — OTHER MILK DERIVATIVES.

The various transformations the industry has undergone have chiefly been in the production of milk, sterilised, condensed or powered.

The extraction of lactose, the fabrication of *casein*, alimentary and industrial, the preparation of *milk stone*, *lactic acid*, *butyric acid* and their derivatives have also been greatly developed by the large establishments.

The principal by-product of milk, whey, is utilised in pig raising and thus feeds a flourishing branch of production in dairying regions.

Besides this production of milk derivatives there is an increasing development in the industries accessory to cheese making (rennet, colouring matter, packing material, etc.) and also those producing the necessary utensils for cheese making, such as dairying apparatus.

E. GASSER.

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MISCELLANEOUS INFORMATION

MEETING OF EXPERTS FOR THE STANDARDIZATION OF THE KEEPING AND OPERATING OF HERDBOOKS. — The meeting of Experts, chosen by the Governments to study the technical aspect of a project for an International Convention to be submitted to the Governments with a view to the meeting of a Diplomatic Conference, was held at the International Institute of Agriculture, Rome, from 18 to 21 February, 1935.

Experts from the following countries were present at the meeting:— Germany, Cuba, Egypt, Spain, the United States of America, France, French Colonies and countries under French Protectorate or Mandate, Great Britain and North Ireland, Hungary, Italy, the Netherlands, Poland, Switzerland.

The experts appointed by Greece and Czechoslovakia were not able to be present at the meeting.

The meeting was concluded on 21 February by a vote on the conclusions the text of which is as follows:—

Conclusions adopted.

GENERAL PRINCIPLES.

1. — The experts, while considering that an international organization of Stud-Flock & Herdbooks for horses, sheep and pigs would be desirable, recognize that for these three classes of Live stock there are special questions and problems which are not yet ripe for consideration, and they therefore resolve to limit for the time being the application of the present Convention to cattle Herdbooks, leaving the adhering Governments free to propose at a later date, if found advisable, to extend to the other classes of Live stock regulations similar to those here proposed for cattle.

2. — Recognizing the primary importance of Herdbooks (both from the point of view of breeding and from that of international transactions), the experts have agreed that such Herdbooks should be organized on an international basis, such basis to include: *a*) general form of the Herdbooks; *b*) the methods adopted for the purpose of definitely establishing the identification of the animals registered; *c*) the methods for recording the yields.

Having regard to international commerce the experts have also agreed as to the detailed information which is to be compulsorily included on the pedigree and yield certificates to be issued by the bodies responsible for the Herdbooks.

CHAPTER I. — HERDBOOKS.

3. — In each State there shall be one Herdbook only for a single breed. Taking into account, however, the situation of those countries where, at the moment of signing the present Convention, there are in existence several Herdbooks relating to the same breed, which have proved satisfactory, an exception may be made to this principle of having one Herdbook only, such exception to be announced by the Governments concerned, who shall in the case of a State which is a signatory of the present Convention make their decision known to the International Institute of Agriculture within

(*) This English translation has been carefully prepared by a small group of English speaking Delegates to the Meeting of Experts. While this is a faithful interpretation of the original, it should be born in mind that only the French text is official.

six months from the date of deposit of the deed of ratification and, for the States subsequently adhering to the Convention, from the date of their adherence.

In the case of the single Herdbook for dual purpose breeds, as also for those breeds having an especially large geographical area, which are therefore subject to different conditions of climate, habitat or nutrition, likely to produce differences in conformation and yields, there may be opened in the same Herdbook more than one section, each section corresponding to a single purpose or to a single region. The opening of these particular sections within the same book can only be done under the authority and under the supervision of the special body which is by the terms of Art. 14 made responsible for the organization of the National Herdbook.

4. — All Herdbooks shall be arranged on identical lines and shall contain:

- (a) Register of births;
- (b) Register of males whose eligibility has been approved after inspection;
- (c) Register of females whose eligibility has been approved after inspection.

In connection with the registers (b) and (c) there shall be entered all the information relating to each animal, that is to say, ancestry, results according to production records, prizes won by the animal or by its ancestors or by its offspring.

5. — Besides the three Registers provided for in Art. 4 which should be compulsory it is recommended to the authorities in charge of the Herdbooks that there shall be established an Advanced Register (*Livre d'Or*) or a Register of Merit (*Livre d'Elite*), in which shall be entered those animals whose officially recorded yield has reached in competitions as well as in the shed at home a previously determined standard fixed at a level considerably above the average. As far as sires are concerned, the entry into the Advanced Register shall be made on the basis of the yields of their daughters, determined in the same manner as indicated above for the registration of females.

6. — The opening and closing of Herdbooks being subject to very special and particular conditions, the regulations for initial entry shall become more severe and rigorous year by year.

7. — In the open as well as in the closed Herdbooks, the final entry of any animal, although it may be eligible on the basis of ancestry, cannot be accepted unless the animal has also proved eligible on inspection.

CHAPTER II. — IDENTIFICATION OF ANIMALS.

8. — The animals to be entered on the Register of births shall be marked by such means as will ensure easy and certain identification (e. g., tattooing, ear-punching, nose or lip prints, horn-branding, or any other new method recognised to be effective for the purpose).

All other indications likely to identify the animal must be supplied in addition (e. g., a drawing of the outline of the markings in the case of breeds where the coat is not of uniform colour).

CHAPTER III. — CERTIFICATES.

9. — The Herdbook authorities may issue certificates or extracts from the individual sheets for each animal entered in the Herdbook. The individual certificates, so as to be easily comparable, shall contain the information as indicated on the specimen (Appendix A) attached to the present Convention.

10. — Each certificate shall indicate the Register, a) b) or c) from which it has been taken.

11. — The certificates accompanying the animal must contain all particulars shown on that animal's individual sheet relating to the pedigree (ancestry and off-

spring), the yields and in general to all information required by the present Convention and shown in detail on the specimen sheet annexed. The data shown thereon must be certified as exact by the authority in charge of the Herdbook. The same holds true for all information relating to subsequent yield records which may be later entered.

12. — The recording of yields shall be organized by the Herdbook Associations or by other special institutions working in full agreement with these associations, in accordance with principles and methods which shall be as uniform as possible. In each case, the information given on the individual sheets must indicate, in addition to the milk production and the fat content of the milk, the frequency of the recorder's visit, the Length of the recording beginning from the sixth day after calving, the number of previous calvings and the date of the first calving which followed the last recording period.

CHAPTER IV. — GENERAL PROVISIONS.

13. — The Signatory States agree to recognize as registered breeding cattle only those recorded in Herdbooks, which conform to the rules laid down in this Convention. The Signatory States are prepared to ensure the proper keeping of the books and the systematic working of the organizations responsible for keeping the Herdbook and for issuing the certificates.

14. — It is desirable that in each State, a special body should be made responsible for the establishment the general principles to be followed in the keeping of Herdbooks, and for the supervision of the systematic conduct of these books in accordance with the principles laid down by the present Convention.

It is desirable that on this body, in addition to the Ministries concerned, breeders and animal husbandry experts shall also be represented. The States which have instituted such an organization shall inform the International Institute of Agriculture so that the latter may advise the countries adhering to the present Convention.

15. — The Signatory States undertake also to notify the International Institute of Agriculture as to the bodies specially qualified officially to endorse, for use in international commerce, each certificate issued by a Herdbook organization.

16. — A maximum period of three years is granted to the adhering Governments so that the institutions in charge of Herdbooks may comply with the provisions of the present Convention.

This period shall be reckoned, for each Signatory States, from the date of deposit of the deed of ratification, and, for the States subsequently adhering to the Convention, from the date of their adherence.

17. — In cases of differences arising from the interpretation of the clause of the present Convention or in case of practical difficulties in its application, one of the States interested in the dispute may, in agreement with the other State, ask the International Institute of Agriculture to try to find a way of conciliation.

For this purpose a Technical Committee composed of three experts, — each of the two States interested appointing its own expert and the International Institute of Agriculture selecting the third, shall investigate the matter in dispute. This Committee shall draw up a report which the International Institute of Agriculture shall submit to each of the countries interested, freedom of subsequent action being left to the Governments. The Governments concerned agree to bear in common the expenses connected with the investigation entrusted to the experts.

18. — All notifications arising out of the present Convention shall be addressed by the adhering Governments to the Government which is the depositary of the Con-

Appendix A.

HERDBOOK CERTIFICATE — EXTRACT FROM THE REGISTER
(A, B or C)

Issued on..... 19...

Issued by..... Locality..... Country..... (Adhering to the
International Herdbook Convention).
Name of animal..... Sex..... Date of birth.....
Breed..... Herdbook No. Date of Entry.....
Breeder..... Owner..... Marks of Identification.....
Prices and Awards.....

Ancestry				Offspring as indicated on reverse side			
Sire		Dam		Sons	Daughters	Grandsons	Granddaughters
.....	
Grandsire	Granddam	Grandsire	Granddam	.....	.....	.....	.....
.....	

Signature and stamp of the officer authorized
to confirm the correctness of the certificate

.....

Signature of the Herdbook Officer
in charge

.....

Yield of the animal entered under the No.

Calving		Actual length of recording (*) in days	Recorded Yields		Signature of the Herdbook officer in charge
No.	Date		Milk lb.	Fat lb.	
1					
2					
3					
4					
5					
6					
...					
...					
...					

(*) From the 6th day after calving.

Intervals between recorder's visits: days.

(On the back of the Herdbook Certificate).

Yield of females of the ancestry						Yields of the daughters of the Sire for which information has been requested by the owner:								
Degree of relation ship	Herdbook No.	Calving		Actual length of recording (*) in days	Recorded Yields		Signature of the Herdbook officer in charge	Herdbook No.	Calving		Actual length of recording (*) in days	Recorded Yields		Signature of the Herdbook officer in charge
		No.	Date		Milk lb.	Fat lb.			No.	Date		Milk lb.	Fat lb.	
		1												
		2												
		3												
		...												
		...												
		...												
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		...												

(*) From the 6th day after calving.
Intervals between recorder's visits: days.

vention and to the International Institute of Agriculture, and both these Bodies shall inform the Signatory States.

19. — The Signatory Governments request that the International Institute of Agriculture will proceed, at the expiry of the fifth year following the signing of the present Convention, to enquire among the States bound by the Convention as to the advisability of convening a meeting of experts appointed by the States, with a view to the submission of proposals to the Governments concerned for the introduction into the Convention of such amendments as may have in practice appeared necessary, or for the supplementing of its provisions.

II. INTERNATIONAL CONGRESS OF RURAL ENGINEERING, MADRID, 26 SEPTEMBER—3 OCTOBER 1935. — The 1st International Congress of Rural Engineering took place at Liège in 1930 under the auspices of the International Commission of Rural Engineering. This Commission, at the last meeting held at Paris on 27 January, 1934 under the Presidency of Prof. BOUCKAERT, decided that Spain should be entrusted with the organisation of the IInd International Congress of Rural Engineering. The Spanish Organising Committee announces that the Congress, under the patronage of the Government, will take place at Madrid on 26 September to 3 October, 1937.

The work of the Congress has been divided into 4 Sections:—

Section I: *Soil Science, Agricultural Hydraulics, Farm Installation*: (1) Units and methods of measuring the elements characteristic of the soil from the view point of the flow of underground waters and mechanical resistance— (2) Formulae, co-efficients of contours and graphs showing the flow of water in a uniform system in drain pipes, channels and open conduits. Determination of co-efficients of contours — (3) Relation between the rainfall and the losses ascertained in drain pipes, canalisation, open canals and secondary water courses. Methods of measuring losses. Drainage.

Section II: *Farm buildings*: (1) Methods of ventilating stables — (2) Modern installation: (a) of pig styes; (b) cow sheds; (c) stables; (f) chicken houses; (e) sheep folds — (3) New construction material — (4) Construction for colonisation of land newly brought under cultivation.

Section III: *Agricultural mechanics, application of electricity to agriculture*: (1) Questions relative to cultivating the soil — (2) Conditions of circulation of agricultural vehicles on roads and in the fields (tractors and trailers). Solid and pneumatic tyres — (3) Questions relative to motors and fuels — (4) Mechanical methods of maintenance — (5) Electricity applied to the farm.

Section IV: *Scientific organisation of agricultural labour*: (1) Influence of the arrangement of buildings in the scientific utilisation of labour. — (2) Organisation of piece-work (methods and results obtained) — (3) Contract work (preparation of the soil, treshing) — (4) Establishment of conditions of labour.

During the Congress an exhibition will be held of measuring apparatus and instruments (plates, drawings, photographs, diagrams and apparatus, etc.).

Congressmen will have an opportunity of seeing the various aspects of Spanish agriculture, the hydraulic work and work of colonisation and the improvements made in farming.

Reports and communications should be received by the Committee before 1 June, 1935.

For all information, apply to the Secretary of the Organising Committee, M. E. ARANDA HEREDIA, Calle Amedeo Vives, 10, Madrid (12).

FOUNDATION OF A HIGHER SCHOOL OF WOOD IN FRANCE. — On 20 November, 1934, a higher school of wood was founded in the precincts of the National School of Arts and Crafts, 151 Boulevard de l'Hôpital, Paris. Its' objects are :—

- (1) To train specialists in wood from among young persons from the large schools;
- (2) To give higher and special instruction to those who are already practical in matters connected with wood, chiefly those young persons who will become manufacturers or traders in wood ;
- (3) to complete the instruction of young officers of Waters and Forests by showing them the uses of wood after it has left the forest.

This instruction, which is both practical and scientific, is intended to impart a knowledge of wood and its uses (xylogy and technology), and includes all instruction necessary for manufacturers in wood (sawmills, wood machines, motors, means of transport and uses of wood in construction), also political economy, law and forestry sciences.

BOOK NOTICES (*)

Almanach agricole tunisien 1935, 354 p., édité par l'Office d'Expérimentation et de Vulgarisation agricoles. Tunis, 1935.

This Almanac is the fifth of a series which has been most successful. The method followed in the production of this little book is extremely felicitous. The principal object has been to produce an intelligently popular work by a judicious choice of subjects and by the extremely clear manner in which the articles are written by the technicians who, through a long period spent in Tunis, have become familiar with the very special conditions of agricultural production in North Africa.

The chapters contained in this work are as follows:— I. General remarks. — II. The agricultural year. — III. Administrative information. — IV. Credit and Agricultural Mutual Benefit Societies. — V. Agriculture. — VI. Olive growing. — VII. Viticulture and wine making. — VIII. Arboriculture. — IX. Diseases and pests of plants. — X. Stock-breeding. — XI. Rural Engineering. — XII Returns obtainable from sound farming.

The Office of Experimentation and Agricultural Propaganda, which carries out its' work of improvement in agriculture in Tunis with laudable energy, has succeeded perfectly in the task it undertook when publishing the Agricultural Almanac.

G. R.

DUMONT R., *La culture du riz dans le delta du Tonkin. Etude et propositions d'amélioration des techniques traditionnelles de riziculture tropicale*. (Avec préface de M. Yves HENRY, 435 p., 38 fig. — Paris, 1935, Société d'éditions géographiques, maritimes et coloniales.

Very little is yet known concerning the cultivation, preparation and trade in rice, the world production of which is probably superior to that of wheat and which provides the principal form of nourishment for a great part of humanity. It is true that there exist a certain number of monographs in which general information can be found; what is lacking is detailed information on varieties cultivated, systems of irrigation, methods of preparation of the soil, etc., which vary greatly from one country to another and often even from one neighbouring district to another. It is therefore with great interest that we notice the recent work by M. DUMONT, ex-director of the

(*) Under this heading are included short synopses of books received for review.

Rice Station at Tongking, which is a detailed monograph on a rice growing region of the greatest importance, the delta of Tongking, written by an experienced expert.

The delta of Tongking (excluding the three towns of Hanoi, Haiphong and Nam-Dinh) contains 6 $\frac{1}{2}$ million inhabitants, that is 430 to the square kilometre, who are, it may be said, dependent on the rice fields. The importance of a detailed study of rice growing and the examination of the possibilities of improvements are therefore evident. Before attempting improvements, the Author, in his official capacity, studied, parallel with experimentation, each phase of rice growing as it is at present practiced in the Tongking delta. Only proposals for improvements are discussed; tests on a large scale to put into practice the results of scientific progress are still lacking, but one hesitates, with reason, to introduce changes into cultivation based on ancient traditions and for which the farmers have often found, through intuition, the methods most suitable for the economic conditions. For example, the apparatus used for raising the water from the canals to the rice fields on high ground are numerous and are all worked by man or by animals. A few mechanical pumps have been installed, but, though the results were profitable, the purchase of such machines represents an excessive expenditure in a country where capital is unavailable and, since the crisis, no more have been installed.

This book contains 17 chapters treating:— The physical conditions. — General remarks on rice growing — Economic conditions — Biological conditions — Varieties of rice and their improvement. — Hydraulic installations, and dry cultivation of rice fields. — Live-stock and transport. — Preparation of the soil. — Fertilisers and green manure. — Nurseries. — Transplanting — Irrigation of rice fields. — Cleaning and other works of upkeep. — Harvest. — Threshing, drying and cleaning of rice. — Conservation and preparation. — Qualities and trade in rice. Two appendices are added: one on the diseases and pests of rice written by M. J. NANTA; the other giving a short description of trial fields for rice growing. The plates are reproduced from designs drawn to scale of implements and machines.

It is evident that the Author, in writing this work, has above all considered readers in Indo-China who will certainly understand all the technical terms used in that country, but comprehension of these terms may present some difficulties for those unfamiliar with the special conditions of Indo-China and at times it would be desirable to have more complete explanations; but this is only a minor criticism.

In fact, the work by M. DUMONT might serve as a model for technicians desirous of treating rice growing in other countries. W. B.

KERVEGANT D., *Le bananier et son exploitation*, VIII, 578 p., illustré, Paris, 1935, Société d'Éditions géographiques, maritimes et coloniales.

This work, which has just appeared, supplies a long felt want as up to the present a monograph does not exist on the banana, a food plant that is becoming of increasing importance in a great number of tropical countries. The Author, who is attached to the Agricultural Services of Martinique, has based his survey on the experience acquired by him in that colony, but he has also made a very profound study of publications that have appeared in agricultural and scientific reviews in all countries. The bibliography, which occupies 28 pages and includes more than 700 publications, is a proof of an extremely conscientious work of abstraction which can only be justly appreciated by those who have carried out a similar work.

The book is divided into 31 chapters treating:— History and Botany. — The genus *Musa* L. — Varieties of bananas. — Physical and chemical composition of the fruit and vegetative organs. — Geographical distribution of the banana. — Climate. — Soil. — Economic conditions of cultivation. — Propagation of the banana. — Plantations.

— Work of upkeep. — Irrigation and drainage. — Manure. — Intercalary and shade plants. — Pruning of the banana. — Various works of cultivation. — Harvest. — Yield and renewal of plantations. — Animal parasites. — Cryptogamic and bacterial parasites. — Conditioning and packing of bananas. — Transport. — Ripening. — The banana in food and medicine. — Dried bananas. — Banana flour. — Alcoholic and other beverages from bananas. — Banana textiles and paper. — Various uses. — Principal exporting and importing countries.

The numerous aspects of banana growing and utilisation of the products have been treated with the same care and competency. It is evident that the Author has not been able to give more than a summary of present day knowledge which is still far from being complete with regard to the systematic of varieties grown of the genus *Musa*. A description of all the varieties cultivated does not exist and it only by utilising a living collection such as is now being made by the Imperial College of Tropical Agriculture of Trinidad that such a study would be possible.

Another question of an economic nature merits the attention of those interested, that is the price paid by the public for bananas in different consuming countries. It is certain that these prices vary greatly, due to costs of transport, customs duties, the often too high profit made by warehouse men, etc. But is also incontestable that it is to the interest of banana planters to increase consumption by suitable publicity and a sale price which is not prohibitive for the great mass of consumers. This subject also merits detailed study.

W. B.

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MONTHLY BULLETIN

OF

AGRICULTURAL SCIENCE AND PRACTICE

1935

ORIGINAL ARTICLES

RICE GROWING IN BULGARIA

With a view to assisting rice growers in Bulgaria, a Law was published in the *Official Journal* No. 203 of 7 December, 1932, in which the Agricultural Bank of Bulgaria was charged with buying up to 3 000 000 kg of undecorticated rice of the harvest of 1932, so as to liquidate the stocks remaining inutilised. This Bank, which assists agricultural producers and protects their interests, therefore had another problem added to its' activities, already very extensive. This new function was carried out with success as will be seen later, but the most important point is that the Law in question and the Decree-Law which followed it, established the intervention of the State on a firm basis with regard to fixing the prices for rice, decorticated and undecorticated, with a view to assuring an equitable return for producers.

Certain persons considered this intervention premature, as there was no great surplus of rice in the country to be withdrawn from the market, others were of the contrary opinion. This Law adjusted the prices of rice in the producers favour and at the expense of the consumer, but, given the low consumption of rice which is about 2 kg per capita per annum or an average of 10 kg per household, this was not seriously felt, all the more in that the price of rice had fallen considerably on the internal market in 1933.

The intervention of the State, by the provisions of the Commission of Cartels and the Department for Food Consumption and also by the above mentioned Laws, resulted in the rice question becoming a national instead of a local question, which permits rice production in Bulgaria to be considered generally in relation to the protective work of the State and the Agricultural Bank of Bulgaria until its' union with the Central Co-operative Bank of Bulgaria under the name of Agricultural and Co-operative Bank of Bulgaria. This question presents a certain social interest, on account of the nature of the production and the measures taken by the State to assist and regulate this branch of cultivation.

Very little has been published on the subject of rice in Bulgaria and above all on Bulgarian rice. On account of the nature of the subject and the concentration of rice production in the department of Plovdiv and one or two other regions, the majority of publications are the work of the services of the State and scientific institutions and only a small section has become known to the public in the form of articles in newspapers and periodicals, etc. The questions are studied solely from the scientific, agricultural, chemical or hygienic point

of view or are on the work of irrigation carried out by the State and in relation to the rice industry, but these publications only consider the various question from a single view point. For this reason this article has been written in order to give an idea of rice production from every point of view and also of the work carried out by the State and the Agricultural and Co-operative Bank of Bulgaria for assisting rice growers in Bulgaria.

I. — HISTORY.

Rice growing was introduced into Bulgaria in the XV century, towards 1428 or 1477, after the conquest of the Balkan Peninsula by the Turks, and was established in the south of Bulgaria along the Maritza where topographical and climatic conditions and the quality of the soil were suitable for rice growing.

According to a popular tradition rice was introduced into Bulgaria either by an Indian peasant or by a Bulgarian called Christo or, according to the Turks, by a Turk called Kara Reiz Baba who brought the seed from India or Egypt. As in these two countries the exportation of undecorticated rice is forbidden, he took two geese, gorged them with undecorticated rice and killed them as soon as he had passed the frontier, thus succeeding in introducing this precious seed into Bulgaria.

The first place where rice was planted in Bulgaria is still called « Kasspara » (the place of geese) and the tomb of the importer is in the village of Kara Reisovo near a cross roads and is marked by two stones according to the last wishes of Kara Reiz Baba so that passers by with loaded harvest waggons would remember him and pray for him. Until the liberation of Bulgaria the Turks greatly respected Kara Reiz Baba and, in time, his tomb became a holy place where pilgrims and the sick came to pray for healing.

This legend recalls those on the importation of rice into China, India and Japan and above all into the Island of Madagascar. The pioneers are sometimes mythological beings and there is always divine intervention. It is very improbable that rice was imported into Bulgaria in this way. This cultivation requires a profound knowledge of topographical and climatic conditions of the country, of the quality of the soil and the construction of indispensable implements, etc., and it is difficult to believe that a peasant, Bulgarian, Indian or Turkish, would have had the necessary knowledge or applied it. It is probable that rice was introduced by the Turkish Government as it was a popular crop at that time and it was found that all the necessary conditions for its cultivation existed in the valley of the Maritza. The Government settled peasants in this valley who were practical in rice growing according to rules which remained the same during the whole of the Turkish domination. As to Kara Reiz Baba, it may be supposed that he was an historical personage, probably a « spahi » or « beglar bey » was lived at that time.

As it is proposed, in this work, to study the Laws regulating rice production in Bulgaria and to explain them and show why they were made, completed or modified, it is first of all necessary to explain briefly the basis on which rice production rested during the Turkish domination and up to 1877.

According to the Koran, there is only one God and Mohamed is His prophet. The earth belongs to them, and, after the death of Mohamed and his ascension into heaven, this ownership passed to the Khalifes, their representatives on earth, and finally to the Sultan. All conquered countries were thus considered by the Turks who reduced them to provinces and divided them up into various sized portions which were given as presents to relations of the Sultan or persons of merit, but only for their lives. After their death the land reverted to the Sultan. In time these gifts became more and more hereditary, these temporary owners being called «Spahis» and corresponding to the feudal overlords of the middle ages. Such were social conditions when rice was imported into Southern Bulgaria, then a Turkish province. The civil population cultivated the rice without any payment («angaria») and it has been established that thousands of peasants in western Bulgaria were obliged to make canals for irrigation, prepare the land and carry out all the work necessary for this cultivation.

The «Spahis» were only permitted to profit from the revenues from their rice fields at the time of sowing, that is, every 4 or 7 years. The rest of the time, the population who worked in the rice fields had the right to keep the harvest. The «Spahis» could surrender their rights on rice production and the relative privileges to other Turks. This lasted until 1839 when the Sultan Abdul-Medjid reorganised the feudal system by his «Hati-Cherifé» and transferred the rights on rice production to the State, the taxes going to the public treasury. The «Spahis» were indemnified for their lost rights by an annual pension.

The system of production and its principles did not change though it was the public treasury that now profitted from the rights of the «Spahis». The right to sow rice in certain specified places was put up to auction, and only to Turks. The population was still obliged to cultivate the fields («angaria»). This state of affairs lasted until 1956 when the Decree of reform called «Hati-Human» rendered all subjects of the Ottoman Empire equal and forced labour was abolished. Rice growing no longer yielded large profits and the Turks ceased to rent land from the State which also permitted the richer Bulgarians to take part in the auctions and to produce rice. This cultivation therefore only passed into the hands of Bulgarians after 1856.

The «Hati-Cherifé» of 1839 divided the rights to own rice fields into four categories (both for sowing and water rights), namely:—

- (1) Land belonging to the State which alone had the right to sow rice.
- (2) Land belonging to private persons, the right to sow rice being retained by the State. This land was sown once every 4 or 7 years.
- (3) Land belonging to private persons who also possessed the right to sow.
- (4) Land belonging to private persons, sowing rights being in the possession of other private persons.

This last was the most common. Those who had the right to cultivate rice were rich Turks who had received these rights in reward for services rendered to the Empire and who made large profits from them. If the owner of these rights did not dispose of them in his will, or if they were not sold at least 40 days before his death, these rights reverted to the State.

The whole rice producing region was divided into large sections (Nechiri) or small (Kata). The "Nechiri" were basins surrounded by a canal called "Arc" which supplied them with water. Each "Nechiri" was divided into 4 or 7 plots called "Damghi" of about 100 to 700 hectares each. Only one "Damga" in each "Nechir" was sown each year and never two consecutive years, thus each "Damga" was sown once ever 4 or 7 years according to the number of "Damghi" in the "Nechir". The other "Damghi" in the mean time were cultivated with other crops.

For the purpose of rice production and the establishment of rice fields («Tchaltatzi») the valley of the Maritza and its tributaries was irrigated by canals, the length of the main canals being 560 km and the area of the rice fields being 27 000 hectares. Under the Turkish regime 6 to 7 thousand hectares were sown with rice every year.

Until 1879, sowing and distribution of water was severely regulated. The need of water for this cultivation created special conditions, both with regard to ownership of land and water rights. The land was divided into "Schimi" and "Damghi" and subject to "Tchaltatzi Service" according to ancient rules for sowing every 4 or 7 years, while with regard to water, according to the "Tohumi" (rights in force on "Tchaltatzi" lands) the profits obtained from the rice were divided between the State and the private owners of these "Tohumi". This situation, which existed since the time of the "Spahis", was legalised by the "Tansimat" of 1856, by Articles 124 and 128 of the Turkish Land Law, while the rights (Tohumi) on profits from the "Tchaltatzi" were fixed and defined by the Vizirial Statutes of 2 March, 1869 for the "Mukati", the "Schimi" and the ordinary "Tchaltatzi" in the 4 categories mentioned above.

After the liberation of Bulgaria, in February, 1879, the Russian Government of occupation forbade, in the person of the Governor General G. Grossal, the cultivation of rice for hygienic reasons in eastern Rumelia (south Bulgaria). There were large garrisons at Plovdiv (Philippopoli) and T. Pazardjik and the malaria existing in those districts was attributed to the rice fields.

This measure was not only confirmed by the Regional Assembly of eastern Rumelia, but this Assembly also advised the total destruction of the rice fields. This was chiefly due, in this first year following the end of the Turkish domination, to a desire to get rid of the old feudal regulations on property. It was also for this reason that Article 240 of the "Foundation Statute" of eastern Rumelia was passed: "The freedom of the land and the freedom of the worker are confirmed". The State voluntarily surrendered the profits from "Tchaltatzi Service", and it was thus that the rice fields became free and water became public property. As a result there were no more auctions for renting the "Damghi", and the water and canals became free, land and water were bought up, the "Dinki" (primitive rice mills) were replaced by new mill which were built in greater numbers.

In hardly two years after the interdiction on rice growing, the population, now reassured, seeing the implements used in rice cultivation lying idle and remembering the large profits this cultivation had yielded, requested the Government to permit this crop to be grown again. In 1882 and 1883 the Government

began to study the means of regulating this cultivation and though rice was cultivated here and there in 1882 and 1883, it was not until 1884 that authorisation was given by the Government. The measures taken by the Governments of East Rumelia and Bulgaria will be referred to again later on.

Rice growing was now started again in East Rumelia and when the north and south of Bulgaria were united this cultivation was in full yield. As well as in the valley of the Maritza, which remained the centre of production on account of general conditions, rice was also grown in small quantities in the districts of Doupnitza (village of Kotcherinovo), Petritch and Lourovit.

II. — RICE PRODUCTION.

Up to the time of the liberation of Bulgaria the area cultivated with rice amounted to an average of 6 to 7 thousand hectares with an production of about 7 to 8 million kg of decorticated rice. This was ample for the needs of the country and even a certain quantity was exported to neighbouring countries, namely, Rumania, Serbia, etc.

When authorisation was given to recommence rice growing in East Rumelia the area sown with rice, and also subsequent production, increased without interruption as may be seen from the following Table:—

It will be seen from the above Table that from 1887 the area cultivated with rice increased until the maximum was reached in 1929 with 8714 hectares, that is, 4 times the average area for the period 1888-1896. The quantity of rice also increased with few exceptions, the maximum being reached in 1921 with 12 811 177 kg, corresponding to 23 322 000 kg of undecorticated rice, calculated on the basis of 55 %, that is, the average obtained in the rice mills in Bulgaria.

The average production per hectare varied from 921 kg in 1918 (minimum) to 1686 kg in 1922 (maximum), which gives 1674 kg and 3073 kg of undecorticated rice respectively. These figures are obtained by employing averages, consequently the actual production may differ slightly as in certain years the harvest of paddy may be small and yet give a good yield in decorticated rice, and, conversely, large quantities of paddy may give a low yield in decorticated rice. These yields varied from 48 to 65 %. Even if these figures are not absolutely accurate, information given by the Direction of Statistics show that the average yield per hectare has been doubled in the course of 30 years. This increase has not been greater on account of the fact that a part of the rice is decorticated in the old mills (" Dinki ") where it has not been possible to determine the exact quantity obtained and also in certain places the harvest is often doubtful. This increase is due, not only to improvements in methods of production, but also to the importation of new varieties of better quality and giving higher yields thanks to the Ministry of Agriculture and the trial stations of Sadovo, Plovdiv and others.

The importation and acclimatisation, after the war, of new varieties of rice, characterised by their yields, economic qualities and good grain, is a proof of the interest taken by the State in this cultivation.

TABLE I. — *Area and yield of rice fields from 1887 to 1932.*

Years	Hectares sown	Total yield in decorticated rice	Average yield per hectare
1887 *	1 355	1 354 800 kg	1 000 kg
1888	2 305	2 305 540	"
1889	2 085	2 085 300	"
1890	1 970	1 970 300	"
1891	1 380	1 380 100	"
1892	2 399	2 399 000	"
1893	1 997	1 997 300	"
1894	1 987	1 987 400	"
1895	1 223	1 222 900	"
1896 . . . . .	...	...	...
1897	2 542	2 436 800	959
1898	3 695	3 908 400	1 058
1899	3 224	4 486 600	1 392
1903	4 047	4 439 000	1 097
1904	3 314	5 180 300	1 563
1905	2 955	4 650 048	1 673
1906	2 376	4 476 248	1 566
1907	2 359	3 935 492	1 204
1911	2 319	3 023 900	1 304
1912	2 920	3 747 100	1 283
1913	1 590	2 032 900	1 279
1914	2 179	3 002 200	1 378
1915	2 364	3 247 700	1 374
1916	3 007	3 151 400	1 048
1917	4 770	6 582 900	1 380
1918	4 090	3 767 800	921
1919	1 785	2 348 600	1 315
1920	2 613	3 073 700	1 176
1921	2 742	4 523 300	1 650
1922	3 320	4 559 000	1 686
1923	4 954	7 432 824	1 501
1924	4 718	6 863 426	1 284
1925	6 425	7 551 661	1 194
1926	6 762	8 508 507	1 248
1927	7 391	9 209 098	1 310
1928	7 402	10 079 165	1 430
1929	8 714	12 811 177	1 456
1930	6 820	10 799 300	1 583
1931	6 942	9 058 300	1 305
1932	7 496	10 115 000	1 349

*) For the year 1887 to 1895 inclusive, an average yield of 1 000 kg per hectare is accepted on which the total yields are calculated.

VARIETIES OF RICE CULTIVATED.

The various varieties of rice cultivated in Bulgaria, their appearance, qualities and yield will now be described.

All varieties of rice found in Bulgaria are of the tribe *Oryzeae*, genus *Oryza sativa* L., group *Utilissima* Körn, sub-group *communis* Körn. They are classified in three groups according to the external appearance of the undecorticated rice:— (I) *Awed varieties*; (II) *Semi-awed varieties*; (III) *Awnless varieties*.

(I) Awned varieties.

In the first group will be found all the purely Bulgarian varieties, and among them the principal varieties grown in Bulgaria during and after the Turkish occupation.

(1) *Oryza sativa* var. *erithroceros* Körn., commonly called "Pembe", that is "rosy", on account of the colour of the awns. Its' exact origin is unknown, but probably it was imported from Egypt or Asia Minor after 1879. The panicles are resistant to shedding, it is hardy requires little attention and ripens early. It has replaced the old varieties grown in the country before its' appearance and is now the most widely spread variety though at the present time it is losing ground to the new Italian varieties. The average yield is 2858 kg per hectare.

It is grown in all parts of the department of Plovdiv in good and medium soil, on high lying, warm land, insolated and aerated. The taste is excellent, cooking takes 41 minutes, it absorbs 177 % water during cooking and increases its' volume by 260 %. The weight of the undecorticated rice is 47. kg per hectolitre and the absolute weight is 34.5 kg. The average percentage of hulls is 23 %. The grains are large, white, transparent, fine and of good quality. The period of vegetation is 104 days at the Experiment Station of Sadovo.

(2) *Oryza sativa* var. *vulgaris* Körn. known as "white rice". Growers call it "biaz arpa" in Turkish on account of the light colour of the awns in order to distinguish it from other varieties. It was imported by the Turks and though its' origin is unknown it is probable that it came from Asia Minor. This variety is now only grown in a few rice fields. The quality is on the whole superior to that of "Pembe" and it is incomprehensible why it has been replaced everywhere by this latter variety. Measures are at present being taken to increase its' cultivation as it is also superior to "Pembe" in yield, which is on an average 3330 kg per hectare.

It is grown in the departments of Plovdiv and Petritch in good and medium soil, on high ground, warm, insolated and aerated. The taste is very good, it is fairly resistant to cooking which takes 42 minutes during which it absorbs 145 % water and increases its' volume by 240 %. Weight per hectolitre, 50 kg; absolute weight, 29.5 kg; percentage of hulls 21.1 %. The average period of vegetation is 120 days. It is the most nutritious variety; the grains contain much protein; they are long, white, and transparent with a yellowish tinge. The yield at the mill is good.

(3) *Oryza sativa*, var *amaura* Alef. Called in Bulgarian "red rice" or "Pazardjik red rice", and in Turkish, "karmas arpa". The varieties *rubra* Korn and *amaura* Alef are akin. It was imported by the Turks, but its' origin is unknown. It is chiefly grown near Pazardjik and is one of the best types for making "pilafe". At the present time this variety has almost disappeared as it needs a great deal of attention. It is found in the neighbourhood of Plovdiv (villages of Klimentinovo, Katarlii and Zl Trap) in good and medium soil, on high ground, warm, well insolated and aerated. The grains are white, round, small, glossy, transparent and very fine, and the taste is excellent. It is very resistant to cooking, absorbs 138 % water and increases its volume by 220 %. Weight per hectolitre, 47.5 ;

absolute weight, 31 kg; percentage of hulls 20.9 %; vegetative period, 120 days; average yield per hectare, 3380 kg of uncorticated rice. (good).

(4) *Oryza sativa* var *janthoceros* Körn. A violet coloured species wrongly called by the Turks "karabachac", the true "karabacha" being another species akin to this one. It is only grown mixed with other varieties. Information is lacking on this variety, but it is known that it has excellent qualities. It is grown in the districts of Plovdiv and Stanimaka (villages of Manolé, Rogoche, Katarlii, Kara-Reizove and Sodovo), in good and medium soil, on high ground, warm and aerated. The grains are large, glossy, white and transparent. Weight per hectolitre, 48 kg; absolute weight, 31.5 kg; percentage of hulls 21.40 %; vegetative period 116 days, yield in uncorticated rice, 3300 kg per hectare (good).

(5) *Oryza sativa* var *caucasica* Bat. This variety, of unknown origin, is called in Bulgarian "Petritch red rice". It is chiefly grown in the valley of the Stroumitza, near Petritch, though why this should be so is not known as even if the grain is of good quality it requires much cleaning on account of its' red colour which diminishes the yield and causes it to be little sought after by traders. It grows in medium and good soil, on high lying land. The taste is good, it is resistant to cooking; weight per hectolitre is 45.5; absolute weight, 29 kg; percentage of hulls 19.80 %; period of vegetation 120 days. Yield per hectare is small: 2120 kg.

(6) *Oryza sativa* var *pyrocarpa* Alef. A white variety with red grains, wrongly called "white rice" ("biaz arpa"). On account of the colour of the grains it has always been mixed with other varieties, even at the time of the Turkish domination. Period of vegetation, 115 days; weight per hectolitre, 55.2 kg; absolute weight 28.5 kg; percentage of hulls, 20.9 %. The grains are transparent, glossy, and of a reddish cinnamon colour. The yield per hectare is good; 3300 kg. It is grown in the district of Plovdiv and T. Pazardjik.

(7) *Oryza sativa* var *Desvauxii* Körn. A violet coloured variety with red grains, known by the name of "Karabaahat" on account of the black colour of the awns. Its'origin is unknown though it was imported by the Turks. It is sown mixed with "Pembe". Weight per hectolitre 53.8 kg; absolute weight, 27 kg; percentage of hulls, 21 %; period of vegetation, 114 days. It is cultivated near Plovdiv, T. Pazardjik and the village of Kotcherinovo in good and medium soil. The average yield per hectare is 3000 kg of uncorticated rice. The grains are reddish cinnamon, glossy, but opaque.

(8) *Oryza sativa* var *rubra* Körn. This rice which has no name in Bulgarian is called in Russia "Krasny-ris". It was introduced into Bulgaria from Russia in 1927, by the Experiment Station of Sadovo. It resembles the variety "Karmasa-chali" of Turkestan.

It is found here and there mixed with the red rice of the country. It ripens early; in 104 days. The weight per hectolitre is average; absolute weight 26.5 kg; percentage of hulls, 26.5 %.

(9) *Oryza sativa* var *melanceros* Körn. Also resembles the Russian rice of Turkestan. It ripens late; weight per hectolitre unknown; absolute weight 28.68 kg; percentage of hulls 26.26 %. In 1931 the period of vegetation 124 days.

(10) *Oryza sativa* var *amaura* Alef. Resembles the native red rice and also the Russo-Turkestan variety "Kisil-Chali" ("Krasny-ris"). It is seldom seen

and then only in isolated panicles. It ripens in 105 days; absolute weight, 29.6 kg; percentage of hulls, 21.43. The yield per hectare is good; more than 3000 kg of undecorticated rice.

(II) *Oryza sativa* var *dichroa* Bat. Origin unknown. It has no native name, but is registered at the Experiment Station of Sadovo as "No. 8401". It is rarely grown and is found only in isolated panicles. It is one of the earliest ripening varieties; the period of vegetation is only 99 days; absolute weight 34.47 kg; percentage of hulls, 21.44 %.

(II) Semi-awned varieties.

(1) *Oryza sativa* var *suberythroceros* Kanevsk. Called "pink rice" (semi-awned) or "Pembe" (with less awns). It undoubtedly originates from crossings between other varieties. It ripens early; the absolute weight is 34.47 kg; percentage of hulls, 21.44 %. The grains are glossy and transparent.

(2) *Oryza sativa* var *subvulgaris* Breches. A native white variety. It is found mixed with other varieties, "Pembe" and "Native white", also certain Italian varieties. It appears to be a variation of the variety *suberythroceros* Kanevsk. Weight per hectolitre is a little greater than that of white rice; absolute weight, 38.63 kg; percentage of hulls, 21.58 %. The yield per hectare is good; more than 3000 kg of undecorticated rice. It is cultivated in the districts of Plovdiv and Stanimaka (villages of Kostievo, Ahmatovo, Katarlii and K. Reizavo) in average soil. The period of vegetation is 120 days and the grains resemble those of white rice.

(3) *Oryza sativa* var *subpyrocarpa*. On account of its close resemblance to white rice it is given the same name: "Biaz-arpa". It is cultivated near Plovdiv and Petritch mixed with the native white rice. Weight per hectolitre is equal to that of the variety *Pyrocarpa*; absolute weight, 28.7 kg; percentage of hulls, 22 %; yield per hectare, 3300 kg. The grains are of a reddish colour.

(4) *Oryza sativa* var *subdesvauxii*. Wrongly called "karabachac" on account of the dark colour of the awns and the red grains. It is found mixed with pink rice in the districts of Plovdiv and T. Pazardjik, as is the variety "*subvulgaris*" Breches, the two being considered separate varieties in Bulgaria. Absolute weight, 32.4 kg; percentage of hulls, 21.45 %; period of vegetation equal to that of the violet rice with red grains; yield per hectare of undecorticated rice, 3000 kg. It ripens late.

(III) Awnless varieties.

(1) *Oryza sativa* var *italica* Alef. An awnless Italian variety, the Italian name being unknown. It was imported in 1933 and is chiefly grown in the region of Stanimaka on account of the vicinity of Sadovo where it has been studied for some years under the name of "Awnless Italian rice". The yield per hectare is good; an average of 3132 kg. Weight per hectolitre, 52.5 kg; absolute weight 29.30 kg; percentage of hulls 19.2 %, period of vegetation, 123 days. The grains are white, large, round and glossy, and almost transparent. The flavour

is fair, it is not resistant to cooking, which takes 40 minutes, it absorbs 154 % of water and increases its' volume by 220 %. It grows in light soil on low lying land.

(2) *Nero di Vialone* var *italica* Alef. Known in Bulgaria as "black" or "black Italian" on account of the colour of the plant. It is a variety extensively grown which ripens late; in 130 days. It requires more attention than other varieties and grows in good soil, high lying, insulated and aerated. Weight per hectolitre 53.5 kg; absolute weight, 33 kg; percentage of hulls 20 %. It is found in the district of Plovdiv. The grains are round, large, white, very fine, glossy and opal colour; the taste is excellent, it is resistant to cooking which takes 40 minutes; it absorbs 155 % water and increases its' volume by 230 %. It possesses all the qualities of the best varieties, but the price is lower on account of the opacity of the grains. It is one of the varieties recommended by agromony experts in Bulgaria.

(3) *Precoce Vittoria* var *italica* Alef. This variety is known in Bulgaria by the names of "Precoce" or "Precoce Vittoria" and chiefly "Italian". It was obtained by selection between 1907 and 1919 from the Italian variety "Chinese originario" by Sancio Paolo (of Trino, Vercelli). It is the Italian variety most widely grown in Bulgaria, chiefly in the district of Plovdiv and Stanimaka. Unfortunately it has not been kept pure and is mixed with other varieties. Weight per hectolitre 53 kg; absolute weight 23.5 kg (small); percentage of hulls, 18.9 % (small in comparison with others). It grows in good soil fairly high lying. The grains are white, round, glossy and almost transparent, the taste is fair, cooking takes 40 minutes during which it absorbs 155 % water and increase its' volume by 260 %. The period of vegetation is 123 days, the yield both at the mill and in the field is good; 3280 kg of uncorticated rice.

(4) *Precoce Maratelli* var *italica* Alef. Called in Bulgaria, "Rau Maratelli", "Maratelli" or, more often, "Italian". This variety was obtained in Italy about 1919 by Mario Maratelli by selection from "Chinese originario" and was introduced into Bulgaria in 1923 by the Agricultural Experiment Station of Sadowo. Weight per hectolitre 57.5 kg (good); absolute weight, 33.5 kg (good); percentage of hulls, 19.5 %; yield per hectare 3613 kg of uncorticated rice (very good); period of vegetation, 120 days. The grains are large, semi-fine, opaque, white shading to opal. The quality is inferior to that of the native rice. It is chiefly grown in average soil near Stanimaka. Cooking takes 39 minutes during which it absorbs 145 % water and increases its' volume by 200 %. It is not resistant to cooking and the taste is only fair.

(5) *Precoce No. 6* var *italica* Alef. Called in Bulgaria "Precoce 6" or "seica". It was obtained in Italy about 1913 by selection from the variety "Chinese originario" by Sancio Paolo of Trino (Vercelli) and was introduced into Bulgaria in 1927. It is not extensively cultivated and is only found mixed with other Italian varieties. It is productive, but ripens late; in 126 days. The yield is good; 3400 kg per hectare. This rice grows in good soil, high lying and well aerated, in low lying land it ripens even later. Weight per hectolitre, 56 kg; absolute weight, 32.5 kg.; percentage of hulls, 20.7 %. The grains are fairly fine, not completely transparent; it absorbs 163 % water and increases its' vo-

lume by 240 %. It is fairly popular in the trade, but the yield at the mill is not good.

(6) *Precoce Allorio* var *italica* Alef. This variety was introduced into Bulgaria in 1927 and is known there by the name of « Ransreika » or « Raj ». It originated in Italy where it was obtained by selection from « Chinese originario » by the brothers Francesco and Martello Allorio. It is cultivated in the districts of Plovdiv and Stanimaka, in Thrace along the river Toundja and also in Turkey. It is an early ripening variety; period of vegetation is 104 days. It grows in medium soil, clayey and low lying. Yield per hectare, 2844 kg of undecorticated rice; weight per hectolitre, 59 kg (the highest); absolute weight, 31.5 kg; percentage of hulls, 20.5. The grains are white, round, fine, glossy and transparent. The taste is good and it is fairly resistant to cooking which takes 38 minutes during which it absorbs 155 % water and increases its' volume by 240 %. It is considered as a rice of the best « Carolina » type. At the mill the yield is rather low.

(7) *Americano* 1600. This rice, which has a Japanese origin, comes from American rice. It is called in Bulgaria « Italian late » and also « American ». It was acclimatised in the United States and imported from there into Italy by the « Stazione sperimentale di risicoltura » of Vercelli. It was introduced into Bulgaria from Italy in 1927 by the Experiment Station of Sadovo, but it is not well known and is only found mixed with other varieties. Yield per hectare 3440 kg of undecorticated rice (good); weight per hectolitre, 56.5 kg; absolute weight, 30.5 kg; percentage of hulls, 19.5. The period of vegetation is 132 days in Bulgaria and 180 days in Italy. It will grow everywhere, but prefers high lying, warm ground. The grains are white, round, large, glossy and transparent. The taste is moderately good and it is not very resistant to cooking which takes 34 minutes during which it absorbs 170 % water and increases its' volume by 260 %.

(8) Var. *Sudensis* Korn. This rice takes its' name from the islands of Sonde. It has no name in Bulgaria and is quite unknown to growers and is only found mixed with other varieties. The origin is not known. The yield is average, 2200 kg per hectare; period of vegetation, 115 to 118 days; absolute weight, 32.58 kg; percentage of hulls, 21.45 %. It is cultivated at Meklour (Plovdiv), Liahovo (Paradjik), Ahmatovo (Stanimaka) and Tcherkesitza.

(9) Var. *Zerafschanica*. Name and origin and unknown. Absolute weight, 32.46 kg; percentage of hulls, 20.62 %, period of vegetation, 110 days.

From the above it will be seen that the first group (awned varieties) include all the native varieties which are the ones chiefly cultivated in the country.

The second includes the semi-awned varieties and certain varieties of the first group. It may be remarked that the varieties in this group are becoming more wide spread latterly thanks to the efforts of producers and agronomy experts to discover the varieties most adapted for the climatic conditions of Bulgaria, also soil and conditions of production; giving the best yields and satisfying the taste of consumers.

The third group contains the awnless varieties which in Bulgaria are represented solely by the Italian varieties of *Oryza sativa* var *italica* Alef,

These varieties are also becoming more common on account of the external appearance of the grains.

The best results will be obtained in Bulgaria, studying the most suitable land and also climatic conditions, with the following varieties:— *Precoce Maratelli*, *Precoce Vittoria*, *Precoce Allorio* and *Nero di Vialone*.

The oldest varieties cultivated in Bulgaria during and after the Turkish occupation are:— the white native rice (var *Vulgaris* Korn) and the native red rice (var *amaura* Alef). The first was cultivated everywhere; at Plovdiv, Stanimaka and T. Pazardjik. The second at T. Pazardjik. Both these varieties have good qualities from the economic view point, especially the second. After the liberation of Bulgaria "Pembe" (var *Erythroceros* Körn) gradually replaced these varieties. The red rice appears to have changed and acquired new qualities which differentiate it from the varieties *amaura* Alef and *rubra* Körn to which it should belong. These differences can only be explained by the crossing of this variety with other native varieties, for example, the variety *Erythroceros* Körn with which is found mixed.

From the point of view of cultivation and yield, the first place is at present occupied by "Pembe" (native pink), the second by the Italian varieties (*Precoce Vittoria*, *Precoce Allorio*, *Nero di Vialone* and *Precoce Maratelli*), and the third by the Petritch rice grown at Petritch and Kotcherinovo. The Italian varieties have undergone certain changes for the better or for the worse. They begin to ripen earlier, the yield increases and also the percentage of hulls.

The native varieties are, in general, superior to the Italian chiefly with regard to vegetation and the qualities of the grains, but they are inferior with regard to yield and resistance. Producers, attracted by the higher yields given by the Italian rice, are gradually abandoning the native varieties and replacing them, without discretion, by Italian varieties instead of trying to produce better conditions for the native varieties which contain more protein than the foreign varieties and resemble the "Carolina"; the finest rice in the world. Bulgarian rice is also superior to Italian in the content in fats, ash and raw cellulose. This question will be referred to again when the commercial preparation of undecorticated rice is discussed.

III. — RICE CONSUMPTION.

At the beginning of this article information is given on the land cultivated with rice and the harvests gathered. The question of consumption must now be discussed, especially as this question brought about the intervention of the Commission of Cartels at the Ministry of Commerce, Industry and Labour, in 1931, with regard to the subject of the price of rice, the price demanded by the mills for decortication etc., and in 1932, with regard to the price paid to the producer for undecorticated rice.

Up to the time of the liberation of Bulgaria, the rice produced in the country was sufficient for internal consumption, and even a large amount of the total production was exported to neighbouring countries. After the liberation, and chiefly after the unification of the country in 1885, production became insuffi-

cient and the deficiency was made up by imports from England, Austria, Italy and other European countries. At the same time that rice was imported into Bulgaria, from 1886 to 1929, it was also exported, chiefly to Turkey where Bulgarian rice has always been much appreciated. At the court of the Sultan only Bulgarian rice of T. Pazardjik was used. From 1929 importation ceased on account of customs duties and the difficulties caused by foreign exchanges and also on account of the increase in production and even over-production.

TABLE II. — *Production, trade and consumption of decorticated rice (in kg) from 1887 to 1932.*

Years	Production	Imports	Exports	Consumption
1887 *	1 354 800	4 483 039	39 221	5 798 618
1888	2 305 540	4 378 243	26 753	6 657 030
1889	2 085 300	3 078 150	54 498	5 109 032
1890	1 970 300	3 553 000	50 513	5 492 787
1891	1 380 100	4 890 115	9 284	6 260 931
1892	2 399 000	4 739 908	11 200	7 127 708
1893	1 997 300	4 649 120	7 900	6 638 520
1894	1 987 400	3 913 761	20 622	5 880 509
1895	1 222 000	4 246 421	58 917	5 409 505
1896 . . . . .	...	...	...	...
1897	2 436 800	3 864 796	90 694	6 251 060
1898	3 908 400	2 420 810	254 324	6 074 883
1899	4 486 600	977 456	268 128	5 195 928
1903	4 439 000	1 517 844	1 058 140	4 893 704
1904	5 180 300	3 936 327	137 430	8 979 197
1905	4 650 048	3 846 197	278 098	8 218 147
1906	4 476 248	1 095 181	755 402	5 816 024
1907	3 935 492	3 466 862	181 592	7 220 762
1911	3 023 900	4 053 834	173 606	6 904 128
1912	3 747 100	5 382 212	62 751	9 066 561
1913	2 032 900	7 926 766	47 565	9 943 101
1914	3 002 200	5 906 297	97 675	8 830 822
1915	3 247 700	1 528 939	275	4 776 364
1916	3 151 400	10 679	12 090	3 149 989
1917	6 582 900	49 213	103	6 632 010
1918	3 767 800	30 607	7 089	3 791 318
1919	2 348 600	24 459	—	2 373 318
1920	3 073 700	956 906	230	4 030 376
1921	4 523 300	1 261 335	43 044	5 741 591
1922	5 559 000	1 565 717	3 500	5 161 217
1923	7 432 824	1 332 506	3 917	8 761 413
1924	6 863 426	487 742	2 725	7 348 443
1925	7 551 661	5 149 150	405	12 700 406
1926	8 508 507	703 510	967	9 211 050
1927	9 209 098	240 470	6 334	9 442 234
1928	10 079 165	889 268	5 104	10 963 329
1929	12 811 177	1 977 155	148	14 788 184
1930	10 799 300	2 548	37 960	10 763 888
1931	9 058 300	—	46 258	9 012 042
1932	10 115 000	—	280	10 114 720

*) For the period 1887 to 1895 the annual production is calculated on the basis of an average yield of 1 000 kg of rice per hectare.

The purchasing power of the masses had diminished greatly because of the depreciation of agricultural products. In the Balkans the general impoverishment brought about the replacing of rice by "boulgour" (crushed wheat, corn or or maize) and rice even disappeared entirely from the table of the Bulgarian peasant, owing to the fact that the price of rice was kept up to between 16 and 24 levas per kg during these years, that is, two or three times the ordinary price. The price of rice had to be kept up to this level as the yield per hectare in Bulgaria is about half that which is obtained in Italy, India, etc. and, in addition, the costs of production prevented the growers from selling the rice at standard price.

Rice growers, not being included in the water syndicates, pay the following dues to the State: water right, 40 levas per 10 ares; for assessment for rice fields, 8 levas per 10 ares; and a tax for the upkeep of canals amounting to 20 to 25 levas par 10 ares (according to the size of the canal). Members of the water syndicates pay a tax of 80 to 100 levas per 10 ares to the syndicate. In addition to and over and above the costs of decortication, 1.50 levas per kg is payable in excise duty and 5 levas for sealing each sack. In Bulgaria rice is sold in sacks of 100 kg gross at net price which further increases the cost of rice and prevents it being sold at standard price.

In Table II will be seen the fluctuations in production, importation, exportation and consumption of rice in Bulgaria.

In this Table it will be seen that from 1887 to 1906 the production of rice varied between a minimum of 1 222 000 kg (1895) and a maximum of 5 181 000 kg (1904). From 1906 to 1920 production varied from 3 to 4 million kg without rising above this figure and from 1921 an uninterrupted augmentation took place until the maximum was reached in 1929 with 12 811 177 kg. Importation was subject to parallel variations, but in this case the variations were due as much to the annual production as to completely extraneous reasons; during the years before, during and after the war, etc. These last few years consumption is fixed at 2 kg per capita per annum, or 10 kg on an average per household.

IV. — INDUSTRIAL PREPARATION OF RICE.

At the present time there are 5 factories in Bulgaria for decorticating rice. The first was founded in 1884 at Plovdiv, the others followed, one near the station at Katounitza, one at T. Pazardjik, two more at Plovdiv one of which, the "Maritza", which possessed a flour mill, was burnt down and finally another at T. Pazardjik.

In addition to decorticating rice, the "Spirt" factories at Plovdiv and the "Arpa" at Katounitza possess installations for producing alcohol and the latter also produces vegetable oils.

These 5 factories have 8 engines of 595 C. V. and burn rice husks and sea-coal as fuel, also a heavy oil engine, of 65 C. V., making a total of 660 C. V.

Before giving a short description of production mention must be made of the "Dinki", the primitive mills for decorticating rice, and which are still found in the districts of Doupnitza and Petritch (South-West Bulgaria).

The "Dinki" date from the Turkish domination, they have not been changed in any way and continue to function in the same primitive manner as they have always done. A "Dinka" is composed of three principal parts: (1) a paddle wheel, (2) a lever carrying a stone for decorticating the rice, (3) a receptacle called "Dibek" for holding the rice.

The paddle wheel is set in motion by water falling from a height of 2 to 3 metres. A screw mounted on an ordinary wheel works the lever carrying a stone weighing from 20 to 25 kg which is raised and then falls into the receptacle into which 100 to 200 kg of rice are poured. To decorticate this quantity of paddy 6 to 8 hours is required and a "Dinka" can decorticate 400 to 500 kg of paddy giving from 200 to 250 kg of decorticated rice. Generally the wheels work two levers by means of two screws. The hulls are removed by winnowing.

Rice obtained in the "Dinki" differs from that obtained in the factories in that it contains many more broken grains. By this process the rice does not entirely lose its skin and it cannot be properly polished. It is often bleached by adding maize, but in that case it is not pure as is the rice from the factories. It is powdery, yellowish or reddish and differs chemically from the rice from the factories on account of the presence of numerous foreign bodies. As it is not pure it does not keep and is difficult to dispose of commercially, but the producing population prefers it on account of the taste and because it is very nourishing.

Before being sold to the public, the rice passes through the following processes in the Bulgarian mills:—

It is first passed through a sieve with a large mesh in order to separate it from foreign bodies of large size. It then passes through finer sieves and a drum for breaking the awns from which emerges a mixture of grains and broken awns which is passed through another sieve where it is cleaned by winnowing. Any metallic bodies which might be present are then removed by a magnet. The rice is then decorticated by means of two stones, one revolving on the other which remains fixed, as in the mills. The hulls are kept on one side to be used as fuel. About 25 % of the grains emerge intact from the first milling on account of their small size. These are passed through another mill similar to the first, but the stones are closer together. After the first decortication, the rice is yellowish in colour or reddish and has to be submitted to further preparation before it can become a marketable product. The skin, rich in fats and protein, the superficial cells which contain fecula and even the farinacious part of the grain are removed by polishing. The grains are placed in two or three cones, then in the «havan» which gives a certain homogeneity. The «havan» is composed of a cylindrical hollow stone the inner surface being lined with emery paper and in the centre of which turns a worm screw furnished with iron blades. After a rotation of from 2 to 3 minutes the rice becomes homogeneous and with a dull surface. Then, after being sieved again, the rice passes into a third or fourth polishing cone similar to the "havan", the inner surface of which is, however, lined with felt.

The process is now finished and the product is classed in qualities according to the size of the grains and percentage of broken grains and also according to the variety of the rice and the way in which it has been produced.

The following qualities are found in Bulgaria:—

(a) "Resou". Consists of whole, ripe grains of the largest size. It is not a commercial product as it is kept for the producers themselves.

(b) Ordinary rice. Consisting of whole grains mixed with 15 % of broken grains, half grains or $\frac{3}{4}$ grains.

(c) "Mesigrana". Composed of $\frac{3}{4}$ or $\frac{1}{4}$ grains.

(d) "Karma". Fragments of grains less than a $\frac{1}{2}$ grain in size.

(e) "Kior Karma". Composed of the smallest fragments of grain.

Only the ordinary rice (b) is usually found on the market. It is often mixed with "Resou" to increase the price.

From 100 kilos of paddy are obtained:—

50-60 % ordinary rice;

5-8 % of "Karma";

8-12 % of rice flour (bran);

2-12 % of Karadaria (millet found mixed with the rice)

24-25 % hulls.

Bulgarian rice differs from European in the uneven shape of the grains, the colour, and above all on account of the fact that a mixture of several varieties is obtained, not a single variety, which is called white or red rice according to the proportion of red grains it contains.

Among the residues of decortication, millet (karadaria), straw, "Karma" "Kior-karma" and bran are used as forage while the hulls are used as fuel. The content in nutritive elements contained in these residues makes them an excellent forage much sought after by the State breeding-studs in Bulgaria and also by poultry stations, "Karma" and "Kiar-karma" being excellent poultry food. "Karma" is also used as food by the poor population in the mountains who are not difficult to please and are not particular as to the external appearance of the rice. The straw is used for making hats in the two factories at Plovdiv and Roustchouk. Finally, the residues are sometimes distilled, though not in all distilleries, and small quantities of alcohol are extracted.

COMPOSITION OF THE RICE.

Compared to foreign rice, Bulgarian rice is richer in protein, but contains less ash, cellulose and non-nitrogenous matter. It also has more hulls.

Rice from the "dinki" contains more cellulose than that from the factories. Petritch rice contains less protein and fats than rice from other districts. Bulgarian rice belongs to the category rich in nitrogenous matter, such as the Italian variety "Carolina". It resembles "Carolina" in the content in extractive non-nitrogenous matter and, compared with other rice, it is classed among those poor in such matter.

The millet mixed with the rice resembles it in composition, but contains more fats and ash and less extractive non-nitrogenous matter thereby constituting a good forage for animals and a good poultry food.

The bran from the first two cones and the "Diorlama" obtained in polishing are rich in fats and proteins and also constitute an excellent forage for cattle, all the more in that they are not mixed with broken hulls as in certain other countries.

Analysis of "Karma" shows that it is richer in protein and fats and contains twice as much ash and cellulose as the bran, but less extractive non-nitrogenous matter.

The hulls and awns contain much ash and crude cellulose, but they are very poor in fats, proteins and extractive non-nitrogenous matter.

As to the straw, it is an excellent forage.

(to be continued)

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CULTIVATION OF *ALEURITES* WOOD-OIL TREES

Part 3 (I).

III. — TECHNICAL STUDY OF WOOD-OILS.

The various varieties of *Aleurites* yielding oil are known by the general name of wood-oils, these oils however differ from each other and must be divided into four types:—

- (a) Tung oil from *Aleurites Fordii*;
- (b) Abrasin oil from *Aleurites montana*;
- (c) Bancoulier oil from *Aleurites moluccana*;
- (d) Japanese Tung oil from *Aleurites cordata*.

Abrasin and tung oil resemble each other closely and, generally speaking, have very similar properties and therefore can be considered together under the general name of Chinese wood-oils.

On the contrary, a special study is needed for bancoulier and Japanese tung oils which have rather different properties, especially in their drying quality.

(I) ABRASIN AND TUNG OILS (CHINESE WOOD-OILS).

(A) General information and methods of employment.

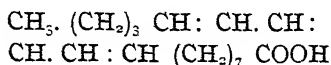
According to M. Jean MORTE, the oils extracted at low temperature are pale yellow; they are viscous at ordinary temperatures, but at very low temperatures turn into a waxy mass, yellowish white in colour.

Their density is very great, hardly less than that of castor oil which is the most dense of all the oils. Their refractive index is also very high. They are very drying, but while the majority of drying oils form a thin skin on the sur-

(1) The 1st Part of this article appeared in this *Bulletin*, 1935, No. 3 (pp. 129-170); the 2nd Part in this *Bulletin*, 1935 No. 4 (pp. 183-197).

face which gradually becomes thicker, the Chinese wood oils solidify throughout the whole mass in a homogeneous manner. They polymerise under heat and for this reason become hard and elastic and after being heated do not regain their viscosity when cooled.

The drying properties of Chinese wood oils are due to their chemical composition. They are composed principally of a glyceride of eleostearic acid and contain about 10 % glycerides of oleic acid and 2 to 3 % glycerides of saturated fatty acids (chiefly palmitic and stearic acids). The eleostearic acid belongs to the linoleic series and the formula accepted by many chemists is as follows:—



Like other acids belonging to this series it has the property of hardening and thickening by oxydation.

The industrial uses to which Chinese wood oils can be put are very numerous, the following being the best known: paints, varnishes, manufacture of linoleum, artificial rubber, preparations for loading paper so as to make it water proof, preservation of wood, caulking ships without oakum, replacing castor oil in the preparation of nitro-cellulose lacquers. To these may be added the preparation of Chinese ink and certain liniments for the treatment of ulcers and burns. It is also used, but less frequently, for the destruction of animal pests as Chinese wood-oils are poisonous, and, in small doses, as an emetic against poisoning caused by taking opium. In conclusion mention must be made of the manufacture in Japan of rain coats of oiled paper, called "kappa" and the lanterns also made of the same paper.

To begin with crude Chinese wood oils had difficulty in finding a place on the European and American markets as they did not form a clear film in drying as does linseed oil and also their polymerisation rendered them inutilisable in the manufacture of paints and varnishes. At the present time manufactures have succeeded in overcoming these difficulties by means of preparations which they keep secret, though it is possible to give, on general lines, the preparation given to crude Chinese wood oil to render it utilisable in the making of paints and varnishes.

According to Belsunce, the method most commonly used for paints is to heat crude Chinese wood oil for two hours at 170° C and then to leave it to settle and clarify. The layer of clear oil is then decanted and heated for one hour at 180° C. When it has thickened a little the temperature is allowed to fall to 130° C and it is mixed, without agitation, with 2 % litharge. After this treatment the oil can be diluted with turpentine or some other solvent and used when required for making paints and varnishes. Although the gelatinous and polymerised oil may be insoluble in the usual solvents such as turpentine, it may be melted down again in its weight in poppy seed or nut oil and the whole heated, after which the soft mass that results is soluble in solvents.

There are several variations of this process, for example, one part of Chinese wood oil may first be heated with two parts of linseed oil, or it may be heated

with mixtures of glycerine and colophane, and the resulting varnish incorporated with varnish composed of copal and linseed oil. Again, the oil may simply be heated to 250° C until it jellies and mixed with two parts of linseed oil.

(B) *Composition of Chinese wood oils of various origins and specifications of these oils.*

It is interesting to study the general composition of samples of abrasin and tung oils from different countries so as to ascertain whether these oils, and in particular abrasin oil, conform to the characteristics required in the various countries.

The different industrial groups utilising Chinese wood oils have established a list of characteristics required by them in these products. These qualities may be divided into two categories: physical and chemical characteristics, and organoleptic and practical properties.

In Table XVI will be seen the information given by Mlle François on the requirements contained in the specifications of the principal importing countries.

TABLE XVI. — *Specifications of Chinese wood oils.*

Characteristics	England	Australia	China
Density 15, 5-15, 5	(at 15° C) 0.939-0.943	0.939-0.943	0.940-0.943
Refractive index at 25° C. . .	(at 20° C) 1.518-1.522	1.515-1.520	1.5165-1.520
Acidity value (mgm KOH per gm oil)	5	8	8
Saponification index	189-195	189-195	190-195
Unsaponifiable matter	0.75	0.75	0.75
Iodine index (WIjs).	155-167	163	165

In addition, the oils should come up to a certain standard of quality which varies according to the countries given below:

England: (1) The raw material should be constituted by Chinese wood oil, which, kept for 24 hours at a temperature varying from 60 to 70°F (15.6°-21.1°C), should not show any impurities.

(2) The oil should not have more colour than the standard sample.

(3) The oil should be free from mineral acid.

(4) The oil should coagulate in a maximum time of 12 minutes or behave in a way identical to that of the standard sample.

(5) The oil should not contain acids likely to give insoluble bromides.

(6) The sample analysed should be at least $\frac{1}{2}$ an imperial pint.

Australia: — The Australian Commonwealth Engineering Standard Association specifies the following points:—

The oil should be obtained by expression from seeds of *Aleurites Fordii* or *Aleurites montana*.

With the Brown test they should coagulate in 12 minutes.

With the Worstall test they should become "ropy" in 8 minutes.

They should contain no acids liable to give insoluble bromides.

China. — All tung oils exported from Shanghai, in bamboo receptacles, iron boxes, wooden barrels or tanks on board ship, should, before being sold, be submitted to inspection and cannot be sold without a certificate from the inspection Bureau.

In addition to the analytical figures given in Table XVI, the oil should have the following characteristics: it should be limpid and only slightly coloured: Brown test, 52 minutes: Worstall test, 8 minutes.

The gel should be dry, solid and easily reduced to powder when pressed with a spatula to which it should not adhere.

Germany. — No special specifications exist. It is to be supposed that only private agreements are made between suppliers and consumers.

France. — The only conditions required for acceptance refer to the jelling of the oil. The tests, also, are not carried out under the same conditions by all firms.

The care taken by the States to prevent fraud show the interest they have in examining oils from different sources. Mlle Francois, in collaboration with M. BOUILLAT, has prepared a series of abrasin, tung and bancoulier oils, as will be seen later, by extracting the lipids contained in carefully identified fruits, by means of light petrol ether.

In Table XVII will be found the results obtained by these two investigators with regard to abrasin and tung oils.

TABLE XVII. — *Typical characteristics of abrasin and tung oils.*

	Acidity index in oleic acid. %	Saponification index	Iodine Index		Density D $\frac{15}{15}$	Refractive index 21° C
			HANUS	WIJS		
<i>Tung oil:</i>						
Nº 1.	0.62	195	166-168	159-179	0.9489	1.51992
Nº 2.	0.84	192	150-166	156-169	0.9422	1.51875
Nº 3.	0.53	193	144-173	163-172	1.9448	1.51895
Nº 4.	0.6	192	165-172	160-175	0.9429	1.51895
<i>Abrasin oil:</i>						
Nº 5.	1.3	191	158-170	156-168	0.9340	1.51012
Nº 6.	1.5	192	137-151	155-168	0.9399	1.51194

In comparing this figures with those required by the specifications the following may be remarked:— (1) the density, above all for tung oils, generally exceeds the accepted limits; (2) the refractive indices of tung oils only are suitable, those of abrasin oils are too low; (3) the acidity value of the oils is always low; (4) the saponification index always corresponds to the specified requirements; (5) the iodine index of Chinese wood oils cannot be determined with precision, also, the majority of genuine oils do not conform to the specified requirements.

Mlle. FRANÇOIS says in conclusion that a single test distinguishes abrasin from tung oils, that is, the refractive index or rather the dispersion at refraction.

After having established, with all possible precision, what are the requirements to which abrasin and tung oils should correspond in order to be accepted commercially, the chemical composition must be given of samples of these oils from different countries where trials are carried out on their cultivation, in order to estimate the value. To this end. Dr. L. A. JORDAN, Director of the Research Association of British Paint, Colour and Varnish Manufacturers and member of the Sub-Committee for tung oil of the Imperial Institute, has analysed abrasin and tung oils obtained from samples of fruit from different countries in the British Empire and other States. The results obtained by him are as follows:— (the analyses were made according to the method prescribed by the British Standards Institution).

(a) *Sample of fruit of Aleurites Fondii from Assam.*

Colour.	Straw
Acid value (mg of KOH)	0.49
Iodine index (WIJS)	168.6
Heat test	11.8
Refractive index at 25° C	1.5177
Density at 25° C	0.9333

The sample of this oil is considered noteworthy on account of its' very pale colour.

(b) *Sample of fruit from Dehra Dun, India.*

	Extracted by solvents	Extracted by cold pressure
Colour	pale	pale
Acidity value (mgm KOH)	1.06	1.0
Refractive index at 25° C	1.5125	1.5203
Heat test	10	9.5
Iodine index (WIJS)	162.4	164.7

The sample was well up to standard and equal to the best American tung oils.

(c) *Sample of fruit of Aleurites Fordii from New South Wales.*

The sample was composed of normal white kernels (a) and brownish kernels (b). The results of the analysis are as follows:—

	a	b
Specific gravity at 25° C	0.937	—
Acidity value (mgm KOH)	0.84	1.26
Refractive index at 25° C	1.5145	1.5150
Heat test	12.5	12.5
Iodine index (WIJS)	169.9	168.3

The above figures show that the oil from these Australian fruits has a composition very similar, on the whole, to that of oil of Chinese or American origin.

(d) *Sample of fruit of Aleurites Fordii from the Transvaal.*

The analysis gave the following results:—

Refractive index at 25° C	1.5189
Acidity value (mgm KOH)	2.32
Heat test	10.5
Iodine index (WIJS)	173.2

These figures show that this sample was better than those previously tested and that Transvaal tung oil fulfils the requirements of the British Standards Institution.

(e) *Sample of fruits of Aleurites Fordii from Natal.*

Refractive index at 25° C	1.5193
Iodine index (WIJS)	166.1
Heat test	11.75

These figures show that the oil was of satisfactory quality.

(f) *Sample of fruits of Aleurites montana from Ceylon.*

	Extracted by solvents	Extracted by cold pressure
Colour	yellow	yellow
Acidity value	0.434	0.406
Iodine index (WIJS)	163.0	163.3
Heat test	14.6	14.9
Refractive index at 25° C	1.5142	1.5140
Density at 25° C	0.9311	0.9311

It will be seen from these results that *montana* oil from Ceylon in certain respects does not come up to the specifications required for tung oil.

(g) *Sample of oil from Aleurites montana from China.*

Dr JORDAN continued his investigations on the value of Chinese abrasin oil for the manufacture of varnishes. From the results obtained he was able to send a completely favourable report on the use of abrasin oil in the making of varnishes. This oil, however, is inferior to tung oil as it does not completely fulfill the requirements specified by England and other countries with regard to the specific gravity, the refractive index and the heat test. He added that the addition of a small quantity of adulterants to tung oil gives a product showing the general characteristics of abrasin oil.

The analysis gave the following figures:—

Density at 25° C	0.9314	
Refractive index at 25° C	1.5140	
Acidity value	3.2	
Iodine index	162.2	
Heat test (BROWN)	17.3	minutes

Dr JORDAN assembled the results of his analyses in a table. The figures obtained by him are shown in Table XVIII.

Species and origin	Acid value	Iodine index (Wijs)	Réfractive index at 20° C	Specific gravity at 15, 5° C	Heat test	
					Method	Time, min.
<i>Aléurites montana</i> :						
China (A)	3.1	163.8	1.5177	...	P. R. S. *	10.3
» (B)	3.7	165.0	1.5183	...	P. R. S.	11.0
» (C)	3.2	162.2	1.5169	0.9367	A. S. T. M.	17.0
Malay. . . . .	...	162.7	1.5135	...	P. R. S.	11.0
					B. S. I.	15.7
					A. S. T. M.	18.3
Ceylon (A)	0.41	163.3	1.5168	0.9367	P. R. S.	11.5
» (B)	0.45	163.0	1.5165	0.9364	B. S. I.	14.9
					P. R. S.	11.0
					B. S. I.	14.6
<i>Aléurites Fordii</i> : *						
China	2.6	171.5	1.5195	0.9406	P. R. S.	9.3
U. S. America { (A)	0.3	170.7	1.5222	0.9393	A. S. T. M.	11.0
(B)	0.6	167.1	1.5217	0.9405	B. S. I.	11.5
					A. S. T. M.	10.5
					P. R. S.	8.3
Union of South Africa { (A)	2.3	173.2	1.5210	0.9416	B. S. I.	10.9
(B)	0.4	172.9	1.5211	0.9418	P. R. S.	9.3
Rhodesia	0.3	170.0	1.5200	0.9407	P. R. S.	9.2
Kenya	0.6	167.7	1.5201	0.9419	A. S. T. M.	12.0
Nyassaland	0.4	163.8	1.5204	0.9406	P. R. S.	9.0
Queensland	0.2	164.5	1.5198	0.9403	P. R. S.	9.8
Burma	0.4	167.9	1.5210	0.9418	A. S. T. M.	11.5
					P. R. S.	8.8
Argentina (A)	0.4	169.8	1.5201	0.9392	A. S. T. M.	11.5
» (B)	0.4	165.0	1.5198	0.9410	P. R. S.	9.8
					A. S. T. M.	12.0
Commercial oils (A)	2.6	172.5	1.5195	0.9403	P. R. S.	9.5
» (B)	2.1	163.2	1.5205	0.9415	P. R. S.	10.5
<i>Present specification limits</i> : (1)						
A. S. T. M. { upper.	5.0	167.0	1.5220	0.943	B. S. I.	12.0
lower. . . . .	...	155.0	1.5180	0.939		
B. S. I. { upper.	8.0	...	1.5220	0.943	A. S. T. M.	12.0
lower. . . . .	...	163.0	1.5188	0.940		

(1) B. S. I. = British Standards Institutions Specn. N° 391 of 1929.

A. S. T. M. = American Society for Testing Materials, Specn. D. 12-25 T.

P. R. S. = Paint Research Station method. (J. S. C. I. 1934, 53,9 T).

(2) The limits specified by the A. S. T. M. are quoted at 25°, but are here converted to the uniform basis of 20° by the correction — 0.00046 per degree Centigrade.

* Selected characteristic samples from various sources and different years.

The Author concludes that as the cultivation of *Aleurites montana* is developing continuously and that abrasin oil will soon appear on the market in large quantities; it is as desirable that the specifications for this type of oil should also

be fixed. There is no difficulty in establishing that the oil sold under the name of abrasin should present characteristics which are clearly defined in the specifications. For example, the lowest figures for abrasin oil with regard to variable characters might be:—

Iodine index (WIJS)	115
Refractive index at 20 C°	1.5130
Specific gravity at 15.5 C°	0.934
Heat test	12 minutes

M. P. AMMAN carried out analyses of *Aleurites Fordii* oils from Madagascar. The characteristics which were obtained are as follows:—

Density at 15° C.	0.9448
Refractive index at 30° C	1.5178
Free acidity in oleic acid	0.296 % on an average
Saponification index	from 190 to 201 according to the method of extraction
Iodine index (Pierre LEVY method)	from 236 to 249.6
Clarifying point	210° C to 215° C
Combustion point	225° C to 230° C

The oil has very little colour.

These results show that it is very easy to obtain clear oils with fruit of *Aleurites Fordii* which would be very valuable for the making of clear varnishes, and that they present all the characters of the best *Aleurites* oils.

Tung oils obtained in Morocco, according to the report sent by the agricultural services of the Protectorat, also show characters conforming to the commercial requirements. The results of analyses are as follows:—

Density at 15° C	0.9445
Acidity index (in oleic acid)	0.40
Iodine index	165
Refractive index	1.520
Saponification index	192

Recent work carried out by the National Office for Research and Investigations of Bellevue (Seine-et Oise) in collaboration with the French industrialists interested in the matter, have definitely established that Indo-Chinese abrasin oil, pure and well prepared, has the same properties and possibilities for use as the commercial tung oil.

2. — BANCOULIER OIL.

Although bancoulrier oil (originating from *A. moluccana*, as has already been stated) does not possess the remarkable qualities of tung and abrasin oils, it appears to be useful to study its' properties more thoroughly on account of the very large area on which *A. moluccana* grows and the abundant harvests it yields. M. P. AMMAN has studied the subject and below will be found the results he obtained. These researches have already made evident the true drying properties, less, it is true, than those of tung oil, but rendering this oil capable of being put to considerable use.

The kernels of bancoulier fruits have a violent purgative action accompanied by head-ache, but the active toxic principle remains almost entirely in the cake and the purgative properties of the oil are very considerably less.

The oil is extracted by expression with great ease, Without exceeding a pressure of 200 kg per square centimetre, a yield in oil of 50 % of the weight of the kernel can be obtained in 20 minutes.

Oil extracted from sound kernels is hardly coloured and has a very low degree of acidity. It may be concluded from the investigations that a troublesome diastasic action in the extraction of bancoulier oil need not be feared, but the presence of unsound kernels, if they are acid, tends to increase, even to a slight degree, the acidity of the oil.

M. P. AMMAM obtained the following characteristics of bancoulier oil with seeds from New Caledonia:—

Density at 20° C	0,9246
Refractive index at 22° C	0,9246
Free acidity (in oleic acid)	0,075 %
Iodine index	154
Saponification index	196
Fluidity at 120,5° C.	78° Barbey
Fluidity at 25° C.	137° Barbey
Solidification point	21° à 22°
Clarifying point.	320°
Combustion point	355°

3. — JAPANESE TUNG OILS.

Japanese tung oil, obtained from the kernels of *Aleurites cordata*, is found all over Japan and on the Caucasian coast of the Black Sea in U. S. S. R.

M. J. MORTE gives the following characteristics for Japanese tung oil:—

Density	0.93404
Acidity	0.47
Refractive index at 20° C	1.5065
Colour	pale yellow

After heating for an hour at 25° C this oil becomes a jelly, less hard than those of *A. Fordii* or *A. montana*.

M. S. J. PETAYEFF has also analysed *Aleurites cordata* oils from the U. S. S. R. and obtained the following results:—

Density at 15° C	0.9316
Refractive index at 20° C	1.503
Acidity	0.95742
Saponification index	195.33
Iodine index (Ghuble)	148

It will be seen from these figures that the Russian *A. cordata* oils correspond approximately with the present requirements of the market.

The oil from the district of Batoum closely resembles Japanese oil. A mixture of Caucasian oil and linseed oil can be raised to a temperature of 250° C for 10 hours before thickening, while the same mixture using Chinese tung oil

coagulates in 2 hours 40 minutes. Varnishes prepared with a mixture of Caucasian oil and linseed oil, with the addition of colophane ethers, dry a little more slowly than Chinese tung oil, but their gloss is about the same. The film of varnish obtained with Caucasian oil is more elastic, but less resistant to humidity and more hygroscopic than with Chinese oil.

V. — UTILISATION OF BY-PRODUCTS.

The by-products obtainable from *Aleurites* are: the pericarp of the fruit, the wood of the trees and, chiefly, the cake.

The pericarp of the fruits is used as fuel in certain regions and in some places the ashes are collected and used in indigo dying. The ashes are also used in China for washing linen. In America the carbonate of potash obtained by washing the ashes is used for making glass.

The wood of *Aleurites* is white, light and soft. It resembles that of *Paulownia*, but is not so good. It does not swell in absorbing water and is supposed not to be attacked by ants. In Japan it is used to a very great extent for making packing cases. In China musical instruments are made from it, small pieces of furniture, packing, cases, etc.

The bark of *Aleurites* contains tannin, but the quality of tannin in the bark of the various species of *Aleurites* is very variable, for example, that contained in the bark of *Aleurites Fordii* is very small (about 1 % at Formosa), while the bark of *A. cordata* contains 11 % and that of *A. montana* 14 %. In Japan this bark is used for tanning fishing nets.

The Imperial Institute of London, in order to ascertain the value of *Aleurites* cake, both as cattle feed and as manure, has made several chemical analyses the results of which are contained in Table XIX. The sample *A* was cake obtained by extracting the oil by expression; sample *B* was obtained by the action of a solvent on the cake from expression.

TABLE XIX. — Composition of *Aleurites* cake.

	Sample <i>A</i>	Sample <i>B</i>
Water	9.53 %	10.47 %
Crude protein *	28.12	32.19
Ether extract	1.58	0.57
Crude fibre	19.93	22.04
Total ash	5.07	5.73
Soluble carbohydrates (by difference)	35.77	29.00
Acid soluble ash	0.23	0.27
Lime (CaO)	0.70	0.83
Soda (Na ₂ O)	0.066	0.066
Potash (K ₂ O)	1.27	1.50
Phosphoric acid (P ₂ O ₅)	1.51	1.82
Chlorine (Cl)	0.029	0.035
Iron (Fe)	0.019	0.016

* Containing nitrogen.

These analyses show that the two samples are very rich in protein and carbohydrates and that if the cake had an agreeable taste for animals and did not contain toxic substances, the food value would be on the whole equal to that of a mixture of palm kernel meal and soya meal.

From feeding tests carried out on rats, poultry, cattle and pigs, it has been definitely established that the cake contains certain substances which render it unpalatable to animals and a substance which has an injurious effect on the mucous membranes of the intestines.

Aleurites cake therefore is only suitable for use as manure.

VI. — TRADE.

China is practically the only exporting country and the United States are by far the greatest consuming country.

Table XX, which has been compiled from various statistics, shows the rise in total exports from China from 1912 to 1934 and the percentage exported to the United States.

TABLE XX. — *Exports of tung and abrasin oils from China.*

Years	Total annual exports	Exports to America
1912-1922	18 000-39 000	
1923	50 000	39 600
1924	54 000	37 100
1925	54 000	64 200
1926	45 400	37 700
1927	54 500	40 700
1928	64 150	49 600
1929	65 700	54 400
1930	71 600	53 700
1931	53 900	40 000
1932	49 433	36 580
1933	66 233	52 636
1934 (first 3 months)	—	10 420

The oil exported comes primarily from the provinces of Szechwan, Kweichow Hunan and North Hupeh where production is as follows:—

Szechwan	35 %
Kweichow	25 %
Hunan	25 %
North Hupeh	15 %

The oil exported is composed of 90 % tung oil and 10 % abrasin oil.

The principal Chinese ports of export are, in order of importance, are Yochow, Hankow, Wanliscen, Wuchow and Chungking.

European imports in 1932 were as follows (according to M. OUDOT):

Great Britain	5 200 tons
The Netherlands	3 600 »
Germany.	1 170 »
France.	1 040 »
Denmark	650 »
Norway	365 »
Italy	235 »

It is extremely interesting to note the variations in prices of Chinese wood oils on the principal world markets. M. BONNET has assembled the average prices since 1912 in a Table which is given below (Table XXI). It must be noted that during the course of a year the prices were subject to rather large seasonal fluctuations according to the approach of the harvest season, or vice versa.

TABLE XXI. — *Variations in the prices of tung oils on the principal world markets.*

Years	China Mex. I. p. picul f. o. b. at Hankow unpacked.	France frs. p. 100 kg. c. i. f. a French port	England pounds sterling per ton c. i. f. London	U. S. A. G. dollars per lb. New York market.
1895-1896	14	50-55	...	...
1912	15.33	...	...	...
1920	17	...	...	...
1921 . . . . .	...	...	...	0.0906
1922 . . . . .	...	...	...	0.0998
1923	17.3	...	...	0.1535
1924	23	...	82	0.1360
1925 . . . . .	...	...	71	0.1121
1926 . . . . .	...	...	72	0.1102
1927	38.40	...	95	0.1317
1928	33.60	...	80	0.1229
1929	37.60	...	70	0.1251
1930	32	560	45	...
1931	29.60	470	37	...
1932	26	360	49	0.055
1933	25	320	45	(*) 0.045

(*) Before the fall of the American dollar.

This Table, though incomplete, shows that the fall in prices following the present crisis is comparatively much less for Chinese wood oils than for the majority of other raw materials. In addition, in comparing the movements of prices in China with those on the different markets of importation, it will be noticed that the fluctuations on the latter were very much greater. In conclusion, the differences shown between the various world markets are due to multiple crises, the principal being the alterations in foreign exchanges, the variations in freights and margins of profits for merchants exporting the oil.

Even making the most optimistic estimates for American production, it appears that a crisis of over-production in Chinese wood oils need not be feared in the near future.

J. LEGROS.

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MISCELLANEOUS INFORMATION

FOURTH INTERNATIONAL CONGRESS ON THE TECHNICAL AND CHEMICAL ASPECTS OF AGRICULTURAL INDUSTRIES, BRUSSELS, 15-28 JULY 1935. — By way of supplement to the information already given on this subject in this *Bulletin* (December 1934, pp. 597-598 and February 1935, pp. 122-123), there is here published certain information obtained from a recent circular regarding Division II: *Problems of Agricultural Science*.

This Division includes the following Sections:—

- Section 1: Plant selection — Raw material for Agricultural Industries.
- Section 2: Agrology.
- Section 3: Use of fertilisers.
- Section 4: Diseases and pests of crops used in industry.
- Section 5: Cultivation of crops used in industry.
- Section 6: Cultivation of tropical crops used in industry.

The international Commission of Agricultural Industries has decided that, in connection with Division II, the following general question should take first place on the Agenda:—

“ Physiological significance of soil reaction as regards industrial crops. Effect of fertilisers on the content of these plants in elements which are of special value to industry ”.

Important transport facilities have now been granted to the members of the Congress by the Belgian Railways, by most European Railways (including the Bulgarian, French, Polish, Spanish, etc.) and also by many Steam-ship Companies.

During their stay in Brussels, the members of the Congress will have special privileges for visiting the *Exposition Universelle Internationale*. The organisers of the Exhibition are arranging a Special Week in their honour and they are already invited to take part in the receptions connected therewith. The Congress will itself be held in one of the Palaces of the Exhibition.

For all further information, application should be made to the office of the Secretary General of the Exhibition, 133 Chassée de Charleroi, Brussels.

Correspondence relating to the work of Division II should be addressed to M. L. DECOUX, Secretary of the Division at Tirlemont, Belgium.

IV. NATIONAL CORPORATIVE EXHIBITION OF AGRICULTURE, BOLOGNA, JUNE 1935.
— This Exhibition will be held in the "Giardini Margherita", and will include the following sections:—

Cereals and their derivatives. — Everything concerning the Wheat Campaign will be assembled in the central pavilion, in conjunction with the Corporative Exhibition of Animal Husbandry and the special Section for Fertilisers. This exhibition will constitute, not only an exhibition of the different varieties of wheats grown in Italy, but also a synthetic documentation of all activities relative to wheat and its uses from the point of view of cultivation, experiment work, propaganda, industry, commerce, etc. The "Ente Nazionale Risi" (National Rice Institute) will be represented, while the Federation of Millers, Manufacturers of Pastes and the Rice Industry will demonstrate to the public the methods of manufacturing paste.

Sugar-beet and Sugar Pavilion. — The pavilion of the Beet and Sugar Corporation will be of great importance on account of the increasing production of sugar-beet for sugar and alcohol (fuel) and therefore merits a prominent place in an exhibition showing agricultural production in all its branches. For this reason this pavilion is next the central pavilion.

Flower Exhibition. — In addition to a large range of cut and growing flowers, there will also be shown:— seeds, bulbs, aromatic and medicinal plants, seasonable fruits. There will also be sections for floral art, horticulture, instruction in gardening and architecture applied to horticulture.

Exhibition of Viticulture and Vines. — Organised by the *Corporazione vitivinicola*, this Section will be of special importance and will be in two divisions: one of an instructional and informative character, the other devoted to the sampling of characteristic Italian products of the vine.

The first of these divisions is housed in its own Pavilion and will illustrate by large-scale pictures the different phases of the cultivation of the vine and of the industry and trade in the products of the grape; at the same typical examples of the wines of the various districts of Italy will be on view.

The second will be in the "Village of the Vines" outside the Pavilion and here the principal Wine-producing Houses will invite visitors to sample the most famous national vintages.

Agricultural Machinery. — This Section will cover an area of more than 5 000 square metres and will demonstrate the development in the manufacture of agricultural machinery in Italy, particularly with regard to tractors, cultivators, electricity applied to agriculture, harvesting machines, threshing machines, wine and oil presses, etc. The machinery can be worked on the spot so as to demonstrate the methods of functioning.

"Artigianato Rurale" Pavilion. — This pavilion, which will cover an area of about 600 square metres, will show the small rural industries in the various parts of Italy. Country workers, in their picturesque costumes, will give demonstrations to visitors of sculpture in wood, rope making, weaving in linen and silk, etc. There will also be an exhibition of characteristic country vehicles, the traditional ploughs in various parts of Italy, horticultural and arboricultural implements and the cutting implements characteristic of different localities.

Oil Pavilion. — The chief exhibit will be Italian olive oil of which there has been an increase in production as well as an improvement in quality. The 32 Provincial Consorzi of Olive growers will send a series of samples of oil characteristic of the various districts. At the same time other oil yielding plants will be shown, including

the castor oil plant which is being increasingly cultivated in Italy and her colonies. In addition, the principal exporters of olive oil will exhibit the oils packed ready for export.

Corporation of Textile Fibres Pavilion. — Textile fibres, and jute and silk in particular will occupy a place worthy of their importance in the economy of the country and the public will have an opportunity of noting the progress made recently in the Italian textile industry from the actual production of the fibre up to the preparation of the material. Thus, for jute, it will be seen how the improvements in seed, manures, methods of cultivation and manufacture have resulted in the production of truly superb materials, while with regard to silk, it will be shown that it is possible for Italy to produce tissues which, for durability and beauty, cannot be excelled by any other country in the world.

Dairying Industry Pavilion. — This will be organised by the National Milk Committee which, in conjunction with the Confederations interested, has decided to divide this exhibition into 3 parts. The first will show, by means of diagrams, the present conditions of production of milk and of its derivatives in Italy. The second will exhibit cheeses sent by all the principal firms in Italy and the *Consorzio del formaggio grana tipico parmigiano-reggiano*. The particular attraction of the third section will be the *model dairy* organised by the National Fascist Federation of dealers in milk and its derivatives. Pasteurized milk, whipped and iced creams, etc., will be distributed to visitors free of charge for purposes of propaganda. During the Exhibition there will be a "Milk Day" with free distribution of this health giving beverage.

Pavilion on the Forestry Militia. — This Pavilion, which can be completely taken to pieces and rebuilt, so as to be transported over the Apennines, is in the nature of a refuge for workmen engaged in water flow and mountain regulation work. It will have accommodation for a hundred persons and, in addition, a lodging for the ganger and an office for the superintendent. Encased in pine and fir trunks and with a steep shingle roof, it will resemble a mountain shelter in the Emilian Apennines. The internal plan, which in the mountains provides two stories subdivided into a number of rooms, will for Exhibition purposes consist of 3 large halls reaching to the roof.

The first hall will show examples of the work and organisation of the Forestry Militia Service. The second, which is at the same time the largest, will contain abundant material to illustrate mountain restoration and adjustment work and will include a large-scale topographical relief map of the section of the Apennines adjacent to Bologna, showing the work that has already been carried out and the distribution of crops, etc. The third hall is reserved for exhibits, illustrating all matters of interest relating to the great domanial forests and the National Parks.

Near to the pavilion there will be found a nursery exemplifying the production cycle of the plants chiefly used in reafforestation work, and also an arboretum, containing the principal native and foreign trees used for similar purposes.

UTILISATION OF WOOD OR MAZOUT IN THE BAKING OF BREAD. — The Committee of Forests, 46 rue de Douai, Paris, is at present trying to encourage bakers to return to the use of wood as fuel for heating ovens.

In country places during the last few years there has been an active propaganda for the use of mazout and at the present time small bakeries are transforming their installations one after another and this paradox may be remarked, namely; in regions covered with forests, some kilometres from a town, steres of wood rot on the ground, the owner (Commune or private person) being unable to find a purchaser for the wood, and the

baker at the same time obtains mazout for baking from long distances and for which he has to pay a high price.

The idea of studying the reasons for this transformation has occurred to everyone interested at present in restoring to forest products the uses for which they were previously employed.

In the past bakers used dry wood for burning in their ovens, usually birch or resinous wood, which gave a clear, bright flame. When the oven was hot the fuel was removed and replaced by the dough. An improvement in this method consists in placing a hearth below the oven in which the wood is burnt. The flame penetrates the oven by an opening called the "gueulard" (furnace-mouth) and spreads evenly over the floor and vault of the oven. A draught is obtained by other openings known as "ouras" (flues) which lead into the chimney. When the oven is hot, at the end of about 10 minutes, the furnace mouth is shut and the dough is placed in the oven. During heating the temperature inside the oven rises to about 600° with wood; heating is progressive. A wood oven can be used for a long time without any repairs being necessary. About 350 grammes of wood are required for baking 1 kilo of bread.

For heating with mazout, burners are used which project jets of flame into the interior of the oven. These flames strike the vault of the oven at a temperature of about 1200°. About the same time is required (10 minutes) to heat the oven, but if, where the flames of the mazout strike the vault of the oven the temperature is very high, this heat is localised; once the burners are extinguished the temperature falls rapidly and the dough must be put in immediately if the bread is to be thoroughly baked.

Finally, as may be remarked by examining the vault of an oven heated with mazout, the bricks are gradually consumed by the flame and crumble away rendering frequent repairs necessary.

It cannot be said that the use of mazout saves time for the baker (though this is one of the principal reasons for which the use of mazout is recommended since the application of social legislation): baking takes 10 minutes in both cases.

Is the mazout method more economical? At Maisons-Alfort, near Paris, where wood costs considerably more than in the country, one baking costs 3 fr 50, using wood, while with mazout the expenditure is 2 fr 50. As there are usually five bakings this is a saving of 5 francs per day, but the sinking fund for the installation of the mazout apparatus must be taken into account which costs 7 000 to 8 000 francs, and also the very expensive repairs to the vault of the oven, chiefly in ovens constructed for the burning of wood and which cannot resist the high temperature of the mazout flame.

With mazout it is only necessary to turn on a tap while with wood the fuel has to be transported to the bake house, stacked up in a wood house, split or sawn up into the required dimensions.

The time has come when action should be taken and the effort required from suppliers of wood is really very small. It is a question of supplying faggots of the requisite size ready for use at the most convenient hour and day, several times a week if necessary, so that the baker is not obliged to store large quantities of wood.

This is what is done by Swiss foresters in the canton of Vaud, which has permitted them to keep their clientèle of bakers in Geneva and Lausanne.

If forest owners (communes and private persons) and wood merchants would organise so as to deliver fuel ready for use, not only to the door of the baked-house, but actually to the ovens, it would be possible to keep and even increase their clientèle of small bakers.

The present time is particularly favourable. Wood fuel exists in abundance in our forests and the bakers who now use mazout are willing to return to wood provided they are assisted a little.

BOOK NOTICES (*)

R. Stazione Chimico-Agraria di Torino, Annuario, Volume XII, 1932-1934. 2 vol.: A: 410 p. with drawings and plates in colour. — B: 435 p., 12 coloured maps. Turin, 1935.

These two fine volumes contain descriptions of the work carried out by the Station of Agricultural Chemistry at Turin from 1932 to 1934 under the vigorous direction of Prof. SCURTI.

The first volume contains the following papers:

F. SCURTI. The Station of Agricultural Chemistry at Turin during the period 1932-34. — D. CORTESE. Behaviour of natural and refined olive oils when treated with ultra violet rays. — G. HAUSMANN. Influence of Ecological and cultivation factors on the suitability of apples for cold storage. — E. BOTTINI. The new experimental refrigerator at the Station of Agricultural Chemistry at Turin. — C. ZAY and F. VILLANIS. Some products used for giving butter substitutes the characteristics of natural butter. — F. SCURTI and G. DROGOU. The determination of mercury in cyanised timber. — F. SCURTI. Chemistry in reference to the transport of foods stuffs. — F. SCURTI. Grapes grown under glass. — G. HAUSMANN. The market for horticultural products at Turin. — F. SCURTI. The great establishments of the Norwegian Nitrogen Association for producing ammonia and nitrates. — F. SCURTI and G. L. PAVARINO. Ochreous stains on the skins of blood-oranges in cold storage. — G. L. PAVARINO. Bacteriology of ochreous stains of ovalshaped oranges. — F. SCURTI and G. L. PAVARINO. Grape scald. — G. L. PAVARINO. Contribution to the study of internal rot in pears. — E. BOTTINI. Influence of environment on banana ripening. — G. HAUSMANN. A new method for revealing internal blemishes in citrus fruit. — E. BOTTINI. Fluorescence of citrus fruits under the action of ultra violet rays. — F. SCURTI and G. L. PAVARINO. Sulphuric acid in the preservation of table grapes. — F. SCURTI and G. L. PAVARINO. Biochemical modifications in bananas at low temperatures. — G. HAUSMANN. Contribution to the knowledge of cryptogamous diseases in fruit preserved in cold storage. — G. PIANO. Musts and wines in the province of Aosta during the period 1931-1933. — G. PIANO. Musts and wines in the province of Cuneo during the period 1931-1933. — G. PIANO. Musts and wines in the province of Novara during the period 1931-1933. — G. PIANO. Musts and wines in the province of Turin during the period 1931-1933. — G. PIANO. Musts and wines in the province of Vercelli during the period 1931-1933. — F. SCURTI. Analyses carried out on behalf of private persons during the period 1932-34 (special report). — F. SCURTI. The service for the discovery of fraudulent practices in the preparation and marketing of agricultural produce during the period 1932-1934 (special report).

The second volume is wholly devoted to a scientific study of the land and soils in Piedmonte with a geographical map for each region, and maps showing the acid and lime contents of the soils respectively. In this striking contribution to the institution of a soil map for Italy, the soils of four districts in Piedmonte the Saluzzo, Vercelli, Pinerolo and Turin have been studied in detail and from the scientific standpoint.

The care and methodical accuracy involved in this remarkable work cannot but evoke the highest praise. G. R.

L'aluminium dans les industries chimiques, alimentaires, et industries connexes. 138 pp., 50 illustrations, Paris 1935, International Bureau for the uses of aluminium.

This brochure, which is very finely printed and presented, has been prepared by a Committee of Engineers for the purpose of coordinating the results of the trials of aluminium made in various countries with the knowledge gained by practical experience.

An exact knowledge of the behaviour of this metal in regard to the chemical, alimentary and other products with which it is brought into contact is necessary by reason of its constantly increasing employment. This is true for a number of agricultural products or of agricultural material transformed by agricultural industries, for example, milk, butter, cheese oils, fruit juice, beer, meat, acids, etc. Aluminium is also very largely employed in making packing material, sealing bottles, the preparation of certain components for machines and motors, etc. These applications, which are now in fairly general use, are of considerable importance and of special interest to the agricultural world.

(*) Under this heading are included short synopses of books received for review.

The grouping of the information contained in the volume has been made very clearly and judiciously as will be seen from the following chapter headings:

I. General. — II. Methods of testing the chemical resistance of aluminium and its alloys — III. Working in aluminium — IV. Surface treatment — V. Precautions to be observed in setting up and maintenance — VI. Content of aluminium in organic and inorganic substances — VII. Content of aluminium in other substances — VIII. Some examples of the uses of aluminium. G. R.

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MONTHLY BULLETIN

OF

AGRICULTURAL SCIENCE AND PRACTICE

ORIGINAL ARTICLES

RICE GROWING IN BULGARIA

V. — OFFICIAL MEASURES FOR ENCOURAGING RICE CULTIVATION.

It has already been said that to begin with the Turkish Government reserved it itself the right to cultivate rice and that later these rights were conceded by « Perati » to persons who had rendered service to the State. Gradually in some cases this right became hereditary, with the right to sell, and in other cases were held for life, also with the right to sell, according to the Statutes of the « Cehini », « Musati » and « Tchaltatzi ». Those holding hereditary rights could sell, but the sale must take place at least 40 days before the death of the owner in order to be valid. Failing this, the sale was annulled and the rights reverted to the State. Transmission of rights was executed by special « Berah » of the Sultan.

Rice growing was organised in such a way that the same place was only sown with rice every 4 or 7 years, the rest of the time being cultivated with other crops so that, thanks to this rotation, the land was not exhausted.

When the time of sowing came round, those who possessed the right to sow (State or private person) exercised this right as they wished. Generally the State rented the land away while private persons cultivated the land themselves or conceded it to others under certain conditions.

Such was the situation in Bulgaria in 1877 at the time of the liberation and constitution of two free, but vassal, principalities, namely, Bulgaria and Eastern Rumelia; now South Bulgaria. The centre of production being the valley of the Maritza and its tributaries, the question of rice growing first arose in Eastern Rumelia where, as has been already said, the Russians prohibited it for reasons of hygiene. This prohibition lasted until 1882 and in 1883 only a few rice fields were sown near Plovdiv and T. Pazardjik. In 1884 the Regional Assembly decided, by a special law, to authorise rice growing. In the following years this cultivation developed increasingly in Eastern Rumelia. In 1884 the Direction of Agriculture proposed a law to the Governor General which was neither considered or passed. On 22 August, 1885, the Permanent Committee for Eastern Rumelia voted an official regulation which was not applied as a few days afterwards the unification of Bulgaria took place.

The rice question is connected with irrigation and is examined in Art. 25 of the Law on the Departmental Prefects and heads of districts.

The idea of making a special law on the rice fields was taken up again in November, 1887, and a bill was presented which however was not passed. The chaos caused by the "Tchaltatzi" question and the number of complaints from rice growers, farmers, millers and other persons interested obliged the Government to nominate several commissions to study and solve the question. Thus, in 1888, a medical commission was nominated to study it from a hygienic view point, chiefly with regard to the prohibition placed on rice growing by the Russian authorities in 1879. In 1891 another commission was nominated.

Both of these commissions concluded in their reports that a law on rice growing was necessary and that the danger of malaria would be reduced to a minimum if cultivation was regulated and water was kept flowing.

In 1887, on the request of the Prefect of T. Pazardjik, the State imposed a special tax called "water right" on land sown with rice. This tax was not ill received by the population who saw in this intervention by the State a safeguard of their interests with regard to the use of water. From that moment there was an implacable quarrel between growers and millers for the use of water. In 1889, the Government began to exercise its' rights on the "Tchaltatzi" lands by renting them off, and in 1891 this right was extended to private persons (Official Journal, No. 231, 1890). This measure provoked great discontent among farmers accustomed to consider their land as free from all forms of servitude, and, towards the end of 1893 and the beginning of 1894, the Government was obliged to follow the recommendation of the General Assembly, which was: *That the State should not rent off the rice fields and that a law should be prepared on them.*

It was then decided that (1) Owners of rice fields should sow them themselves, the Government subsequently fixing the rent. (2) The Minister of Finance was charged with nominating a special commission to study the question of the "Tchaltatzi" in the departments of Plovdiv and T. Pazardjik.

In 1894 a new bill was presented on the rice fields which was not even considered and a second bill suffered the same fate in 1898.

It has already been said that with the unification of Bulgaria the Prefects acquired the right to deal with the rice question. The "water right" tax was asked for by the millers possessing mills or other installations on rivers and canals as compensation for water taken for irrigating the rice fields. The Council of Ministers gave a decision on this question which was afterwards annulled in 1900 and a commission was nominated to study the rights of millers, who, seeing that it was decided to recompense them by the revenue from the "water right", gained confidence and commenced a determined contest with the growers. This obliged the Government to present another bill on this thorny question which the Chamber did not consider. Thus, the rice question in Bulgaria was continually put off and the Government only took temporary and superficial measures. The Prefects, owing to the rights conferred on them by Art. 25. of the Law on the Prefects, replaced, in fact, the "spahis" and "beys". They possessed unlimited authority in this respect and collected the "water right" tax, but, though they acted in the name of the Government, the majority of their decisions were taken from a personal view point and in their own interests or those of persons related to them.

The greatest efforts to regulate rice growing were made by the Prefect of Plovdiv, P. MANOLOFF, a conscientious officer who made use of his authority to compile a list of rice fields existing in the valley of the Maritza and to establish the order in which the land should be sown. This list is a most valuable work, above all with regard to the distribution of water, as it does not apply the old system though does not make a new distribution. These decisions remained in force until 1910. The growers protested against the "Water right" tax which they considered too high (1.50 levass per 10 ares) and requested that it should be annulled, but in 1904, according to the Appendix to Art. 25 of the Law on the Prefects, it was raised to 2 levass.

The Water Service, established by the Ministry of Commerce and Agriculture in 1906, based the question of the use of water on entirely new principles, required by the development of agriculture and the increase in the industrial needs of Thrace. The Water Service commenced its work on the order in which rice should be sown and at the same time produced detailed maps of rivers with the irrigation basin of each with regard to rice growing and other crops. Great difficulties were encountered in carrying out this work, chiefly with regard to irrigation, and the Ministry of Commerce and Agriculture was obliged to present a bill on canals and irrigation which was presented to the Chamber at the end of 1908. Not only was it not passed, but also the studies undertaken on rivers and irrigation were suspended.

This state of affairs lasted until 1911 when the Ministry of Agriculture and Lands nominated a commission to study the question and prepare a proposal for a bill on the use of water. This commission consisted of 20 members and began by studying the laws existing in the country and abroad, namely, (1) the civil laws of the Ottoman Empire, (2) the Turkish law and regulation of 1894-1910 on rice fields, (3) the Egyptian law of 1901 on dykes and canals, (4) the French law of 8 April, 1898 on water regulations, (5) the following Italian laws: (a) the *Codice civile dei beni, della proprietà e delle sue modificazioni*, (b) *legge concernente le deviazioni di acque pubbliche*, 10, III, 1884, (c) *Legge intorno alle opere idrauliche delle diverse categorie*, 22, VII, 1904 (*Dalle acque soggette a pubblica amministrazione*), (d) *Legge sulle bonifiche dei terreni paludosi*, 22, VI, 1906; (6) the Prussian law on water; (7) the Austrian law on water of 1912. The Commission subsequently drew up a bill on water which was also not accepted. It was only in 1921 that the law on the water syndicates was passed and the general State programme on water, which were completed by the Decree No. 6 of the Higher Council of Waters. This Law and Decree are still in force.

According to these last regulations, the Water Service dependent from the Ministry of National Economy determined each year the areas to be sown with rice according to a scheme of crop rotation established for the rice "Damghi". When the rice fields have been irrigated the remainder of the water may be utilised for other crops according to be regulation No. 6 of the Higher Council of Waters which is the supreme organ of the State for this question.

Applications for water for rice fields should be presented before 15 February each year; for other crops, before 15 May. Applications by owners for water should be endorsed by the mayors of the respective communes in order to certify

the ownership of land. Applications by lease holders should be countersigned by the owners and if the application is made by a co-operative society or an association the person representing the association should be indicated and it should be countersigned by the person indicated.

On presentation of the application payment must be made to the engineer of the section of half the total sum payable in taxes for water rights, cleaning canals and other installations, etc.; the other half must be paid to the same engineer not later than 1 July of the current year.

For all crops other than rice water is only distributed on certain days of the week, fixed by the engineer, in quantities relative to the area to be irrigated, to the land, the quantity of water available, weather conditions and the rice fields which must be irrigated with the same water.

The upkeep of the principal canals, installations and dams is born by the State and users of water, while that of secondary canals, streams, etc., is born by users alone under the control of the authorities.

Those irrigating their rice fields or other crops are obliged to undertake all necessary measures to prevent the flooding of neighbouring land. All damage caused to third persons by the unskilful use of irrigation water has to be made good by the culprit.

All users of water who have not paid their dues within the time fixed by the Water Section have the water cut off. This time limit is fixed and the date is communicated in writing to those interested. In cases of non-payment within the fixed time limit, all taxes, costs of measuring, upkeep of canals and installations, are recovered according to the order providing for the recovery of taxes in arrears payable to the State contained in the Art 42. of the Law on the water syndicates.

The figures for consumption in the country show that up to 1930 production was not sufficient to satisfy requirements, while after that year, owing to the increase in production and the reduction in the purchasing power of the population, there was a surplus in the harvest of 1932 (by surplus is meant the quantities exceeding the ordinary reserve, that is, 30 % of the annual consumption). Producers and industrialists then feared a drop in prices and in response to their wishes the Government promulgated a law for the protection of rice growing in Bulgaria. According to this law, the Agricultural Bank of Bulgaria was authorised to buy directly from producers or through the intermediary of the agricultural co-operative societies, up to 3 000 000 kg of uncorticated rice of the harvest of 1932 at the price of 5 levas per kg, delivered free at the place of consignment. This law, unique up to that time, may be considered as one of the principal measures taken in favour of the producer by establishing a fixed price for paddy. We consider it necessary to mention those Articles contained in it which touch on the questions of purchase, rights and the manner in which they should be applied.

In addition to the authorisation given to the Agricultural Bank to purchase up to 3,000,000 kg of uncorticated rice, the principal was also accepted of making purchases, beginning with the producers who had sown up to 5 hectares of land of which they were the owners or which they held on lease. When this was not

sufficient to cover the quantity to be purchased, the surplus should be bought from producers who had sown from 5 to 10 hectares. The uncorticated rice belonging to co-operative societies assembling the production of their members for collective sale, should be purchased in conformity with the provisions contained in Art. 3 concerning land sown. If the established quantity still remained uncovered the law authorised the Bank to buy progressively from producers who had sown 15, 20, 25 hectares and more.

The funds constituted by the tax of 0.80 levas are administered and expended by the administrative council of the Agricultural and Co-operative Bank of Bulgaria with the approval of the Minister of National Economy.

Industrialists treating the rice are obliged to receive in their factories, free of charge, all the uncorticated rice bought by the Bank from the harvest of 1932. If a factory refuses to do so, while having the necessary space available, the refusal is established by a Commission composed of the director of the Agricultural Bank of the district, the agronomy expert and the chief of the taxation bureau, or by their substitutes. The Bank then hires a storehouse and appoints watchmen at the expense of the factory in question. These sums are recovered from the factory according to the regulation on the recovery of direct taxation.

Persons who have purchased uncorticated rice below the price of 5 levas fixed by the law are obliged to make up the difference.

All infringement or failure to carry out the law is punishable by a fine of up to 500 000 levas and by imprisonment up to 3 months. It was also established that the specifications concerning the renting of rice fields belonging to communes, land owners or others should be subject to the approval of the Minister of National Economy.

If the period including the wars of 1912-1913 and 1915-1918 and the interval between is excluded, the average consumption per capita is 1 to 2 kg of rice for the years 1887-1932, generally 2 kg. This figure is low and is due to the fact that a large quantity of bread and "boulgour" is consumed by the agricultural population and also rice has always been considered a luxury article in Bulgaria. It could hardly be otherwise, above all after the last war, considering the price of rice was 16, 20, and 24 levas per kg, and even more in outlying villages. When the world crisis came and with it the drop in the price of agricultural products the price of rice was 18 levas per kg. The reduction in the purchasing power of the great majority of the population prevented them being able to buy this very expensive product and consumption was accordingly influenced. It is true that the price of rice also fell at the same time as other agricultural products, but to a less degree and neither the regulations of the Commission of Cartels nor those of the General Department for Food Consumption, which had been established in the attempt to limit or even abolish speculation, were able to bring down these prices to a proportional level.

By the law of 1932, which has already been mentioned, the State not only took up the question of the price of rice, but also obliged the factories to place the necessary storage room at the disposal of the Agricultural Bank of Bulgaria, free of charge, to store the rice purchased by that Bank. A reduction in costs

of transport by the State railways was also provided for, while the price payable for decortication was regulated according to the estimate of the Commission of Cartels and the co-operative societies were given the right to charge a commission on services rendered by them to the Bank in carrying out the work. In order to assure the marketing of the rice bought by the Bank, it was established, by special Ministerial Decrees, that the Ministry of War and the Direction General of Compulsory Labour should buy their supplies direct from the Bank by agreement and at a price fixed by a special Commission. Thus, 250 000 kg were bought for the army and 50 000 kg by the Direction General of Compulsory Labour. This brought about great discontent among traders who were unable to sell to these Institutions, but it resulted in a reduction in prices caused by the glut on the market. This lasted until the middle of the summer of 1933 when it appeared that the harvest would be small and, according to the law of supply and demand, the price of paddy in 1933 rose to 6.50 and 7 levas per kg., and even more.

This decision to supply the State with rice was very just and was taken at the right moment, in fact, producers had been oppressed for some time by merchants and industrialists who had monopolised the harvests and fixed the prices at which rice should be bought in their factories. The State, thus, came to the rescue of the producers, but the best results, which will be discussed later on, were obtained in 1934 for the harvest of that year. For the moment we will merely mention that, thanks to the intervention of the State, the retail price of rice paid by the consumer corresponded more nearly to that obtained by the producer for paddy.

The Agricultural Bank and the co-operative societies were entrusted with applying the measures sanctioned. A description follows of how the work was carried out in 1932-1933 and 1934:—

(a) According to the law of 7 December 1932, the Bank was authorised to purchase up to 3 000 000 kg of paddy from the harvest of 1932, either directly or through the General Union of Bulgarian Agricultural Co-operative Societies of Sophia. On 17 December, 1932, the Administrative Council of the Bank decided that the purchase should be made by the General Union, by Commissions composed of: (1) a president representing the Bank, (2) members consisting of the representatives of the General Union, the producers and also the Co-operative Credit Societies when the rice to be purchased belonged to them. The representatives had the right of veto. The Commissions made purchases in the districts of Plovdiv, T. Pazardjik and Stanimaka, where 95 % of the total production is found. At Kotcherinovo, in the district of Doupnitza, the co-operative credit society collected the rice in advance and the Bank, which had given a credit for the purpose sometime before the law of 1932, only paid the fixed price and stored the rice at Plovdiv.

Before continuing the discussion on the organisation of these purchases, a brief description will be given of the measures taken by the Bank previously to the passing of the Law, in order to safeguard the interests of the small producers and to increase their numbers by assisting them to get out of the hands of money lenders.

According to the law of 1903 on the Bank, previously to the union of the agricultural savings banks with the Agricultural Bank, and the subsequent laws which completed it, the Bank assisted farmers to sow their land by giving credits guaranteed by the crops produced. Generally the products serving as guarantee remained with the producer, they were entered in a special register deposited at the municipality and the mayor was responsible for them. Loans were also granted against products deposited in public storehouses, co-operative storehouses and other depositories. The rice grower was included among the farmers assisted by the Bank, and the branch banks chiefly applied the system of warrents in the rice growing districts. When the rice arrived at the mill for decortication and the producers were paid, the Bank retained the quantity which was due to it. These warrents and other sums due to the Bank were privileged and ranked directly after the sums due to the State.

The branch banks granted these loans in the rice growing districts, but it must be understood that these loans, even rather large, generally only permitted the producer to await a slight increase in prices which generally occurred after the harvest. At the beginning of the season, merchants and wholesalers always kept the prices for paddy low and poor producers who were unable to wait until the market returned to normal were obliged to accept these prices. In most cases the merchants thus recovered the sums they had advanced to these producers for payment of the "water right" and other taxes and to buy seed. In this way the small producer was in debt again from the time of the next harvest, he could not pay old debts and money was advanced to him in order that he might live.

It was necessary to find a more efficacious means of assisting rice growers which was done through grouping them in co-operative societies for dealing with the production, harvesting, sale and decortication of the rice. A co-operative society founded at Kostievo (Plovdiv) in 1928 was the first to attempt this work. It organised the harvest of paddy with a view to sale in bulk and was assisted by the Bank which granted a loan for this purpose. This example was followed by co-operative societies in the villages of Scutarie, Kroumovo, Rogoch, etc., the first of these organising joint production and cultivation. At the beginning of the year the co-operative societies generally advanced the necessary sums for their members to rent land, pay the various taxes and buy seed, these amounts being retained until the accounts are presented and any balance paying for the producers work. Certain societies, being in possession of larger funds, also advanced credits to their members for personal needs and recovered them in the same way. The majority of co-operative societies sell paddy, others decorticate rice, but this depends on the price of paddy and the possibilities their members have of awaiting their turn at the decortication mills. In order to avoid a glut on the market and that each one should have their turn sooner, the Commission of Cartels established that decortication should be carried out in 5 divisions, in turn, so that 20 % of the harvest was decorticated each time, otherwise, while the rice of the large producers was decorticated, the poor producers, being unable to wait, were obliged to sell at a loss in order to live.

Co-operative societies organising production or joint sale of rice only dealt with 4 % of the total production, that is, 800 000 kg. The principal is, however,

established and the co-operative societies and the Bank try to increase the number of societies though great results cannot be obtained as nearly 70 % of the production is in the hands of large producers or is dependant on them.

The Bank carried out its task of purchasing rice from the harvest of 1932 with success. Buying began in January and continued until 1 March, 1933, when no more offers of rice were made. A total of 1 964 956 kg of paddy was bought as follows:—

Districts	Pembe	Italiani	Total
Plovdiv	538 346	227 293	765 639
Stanimaka	800 121	165 606	965 727
T. Pazardjik	157 009	2 223	159 232
Kotcheimovo	74 358	—	74 358
Total			<u>1 964 956 kg.</u>

The paddy was bought in turn as offers came in or else it was bought first from growers who had sown less than 2 hectares.

Taking into account the purchase prices, costs of administration, sacks, etc., the amount paid for rice at the end of the season was 10 690 579 levas, that is, an average of 5.55 levas per kg.

The question of the sale of the rice then arose. According to the Law the Bank could sell the rice either for internal consumption or abroad. A part was decorticated (about 610 000 kg) and sold to the Ministry of War and the Direction of Compulsory Labour as has already been mentioned. During the second and third quarters of 1933, 20 tons were exported to Rumania and 1 008 tons to Hungary which were sold at a standard price, that is, 3.50 to 2.90 levas per kg free on board the barge at Lom on the Danube. When costs of transport are deducted this gives a net price of 1.85 to 2.45 levas per kg, that is a loss of about 4 levas per kg. This loss was covered by the Funds for assisting rice growing constituted, after 25 October, 1932, by the tax of 0.80 levas per kg of decorticated rice levied on the harvest of 1932. The total amounted to 7 031 240 levas, corresponding to 8 789 050 kg of rice produced and consumed in the country.

The remainder was sold to the General Union of Agricultural Co-operative Societies of Bulgaria for internal consumption thereby making up a shortage as the harvest of 1933 was doubtful.

For this reason the harvest of paddy of this year reached a price of 4.50 to 7 levas per kg without any intervention by the State or the Bank. Decorticated rice also increased in price and fetched 16 levas per kg according to the regulations of the Commissariat for Food Consumption.

The fact that the failure of the 1933 harvest was felt in the country showed that the surplus was not as great, as had first been believed, as to justify the exportation of more than 1000 tons. The producer, however, profited by this increase in price and above all by the intervention of the State chiefly

through the Decree Law of 1934 by which rice production became almost a State affair.

When the Decree Law of 26 September, 1934 came into force, the Administrative Council of the Bank, in accord with the Ministry of National Economy, made the following decisions on 29 September, 1934:—

(1) The Agricultural and Cooperative Bank buys unlimited quantities of paddy of the 1934 harvest at the price of 6.5 levas per kg. delivered free at established storehouses, the merchandise to be regularly marketable, containing a maximum of 3 % mixture (millet, husks, dust, etc.). For each point of foreign matter, more or less, the purchasing price will increase or diminish by 1 %.

(2) The Bank buys paddy through the General Union of Agricultural Co-operative Societies of Bulgaria, directly from the producer, or from co-operative societies collecting paddy from their members for the purpose of joint sale. Employees of the Union and those appointed by the Bank are entrusted with carrying out the operation under the direction of the Bank.

(3) Rice will be bought preferably from small growers having sown less than 5 hectares. Producers wishing to sell rice to the Bank should guarantee the area sown by presenting a certificate issued by the municipal authorities. Purchases will be made through commissions at the places of acceptance; T. Pazardjik, Plovdiv, Stanimaka (station of Katounitza). Payment for rice bought is made by the branch banks and the merchandise is stored in the warehouses of the mills. The rice is decorticated directly after purchase and sold, as are also the residues. Sales to State institutions, hospitals, the army, groups doing compulsory labour, etc., are made to order and payment is made by order of the Ministry of Finance, the prices being fixed by the respective authorities appointed for this purpose. Decortication will be carried out according to conditions fixed by the special contracts with the mills and, in case of dispute, the question will be decided by the Ministry of National Economy. Decortication of rice belonging to producers who have not sold to the Bank will be carried out in the following order:— first the rice of those who bring less than 50 sacks, each containing an average of 90 kg; then half the rice of those who bring less than 100 sacks; and lastly, 20 % of the rice of those who bring more than 100 sacks.

(4) All private producers or mills decortivating rice for their own profit pay a tax of 0.05 levas per kg towards the fund for "the improvement of rice growing", apart from that which was established by law of 1932 and intended to cover possible losses on the season of 1934.

The principal point of this Decree Law is contained in Art. 9: "All purchases and sales of paddy, 1934 harvest, made before this law comes into force and at a price lower than the fixed minimum, are annulled if, within 10 days, the buyer does not inform the seller that he accepts the minimum prices indicated by the law. In this case sales should be declared to the Agricultural Bank of Bulgaria, stating the quantity of paddy bought and the price paid. Merchants and millers who have bought paddy should at the same time pay to the Bank, a supplementary tax per kg of rice as provided for by Art. 6 (0.50 levas per kg) and the difference between the prices paid by them and those paid by the Bank to the producers."

This Decree is still being applied by the Agricultural and Co-operative Bank of Bulgaria in which is united the Agricultural Bank of Bulgaria and the Central Cooperative Bank of Bulgaria.

VI. — CONCLUSION.

It will be seen from what has been written in this article that the question of rice production in Bulgaria has been a question of public interest and of the State for the last 50 years, both from the point of view of regulation of production and also from that of the protection of the interests of the producer and of the consumer, but, while up to 1932 it was a question of Decrees and Ordinances on the production of rice and the relations for the use of water from the legal standpoint, during the last three years the activity of the State in the interests of producers and consumers has been directed towards the control of prices. It could hardly be otherwise as though rice growing is considered a profitable crop in Bulgaria, it is not so in reality and, in fact, the yield per hectare is about half what it is on other countries owing to the fact that methods of cultivation are still primitive and the residues are not utilised in their entirety, but, as has already been said, only as forage which in any case is not made the most of as it should be by farmers, and as fuel in the factories. Also no factories exist for transforming rice into various products as the rice industry in Bulgaria is only occupied in decortication.

Under these circumstances it is indispensable that the State should continue to intervene as much for fixing prices as for establishing customs barriers, as, if importation was free, rice growing in Bulgaria would come to an end, being unable to resist foreign competition and, in the best of hypotheses, the producer would not be paid and his position would go from bad to worse. On the other hand, it is necessary to increase national production in order to economise in the sums which would be spent abroad for imports and which at present would not be possible from the point of view of economy, and also would be a practice to be condemned as to import when it is possible to produce is to impoverish a part of the producing population and to have an entirely false conception of the situation.

On the contrary, it is necessary to continuously increase national production so as to arrive at the point when exportation of the surplus is possible when the requirements of the internal market have been satisfied. At the present time exportation cannot be thought of as the taxes which weigh down rice production make it impossible to compete with foreign rice and also because the present installations in the mills only permit the furnishing of a somewhat inferior product, satisfying the taste of the native consumer, and a more thorough and careful treatment of the grain is needed.

Parallel with the increase in production, energetic and systematic work is required for establishing new types of rice by sowing only a few varieties and selecting the variety best adapted to the climatic and soil conditions.

Thanks to the intervention of the State as it exists at present, it is generally possible to organise and maintain prices for internal consumption and others for

exportation which must be encouraged by premiums or other means. On account of the limitations and difficulties now existing with regard to foreign currencies, if rice was left a free product, by way of compensation exportation would increase owing to existing rules on premiums on foreign exchanges and, generally speaking, the possibility of obtaining a direct income, or otherwise, for a part of the rural population would be increased. On the other hand if the prices paid to producers and the sale prices of decorticated rice approached each other more closely consumption would increase in the country which is at present almost nil and thus it would be possible for national production to satisfy the requirements of internal consumption for some time to come.

It is to be hoped that the State will continue its' activities on the same lines as up to the present so as to assist rice production from which only a few large producers and industrialists have profited at the expense of the small growers.

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ASPECTS OF TRUFFLE GROWING IN FRANCE AND ITALY

Although less popular than thirty years ago, truffle growing is still of decided importance in certain countries, particularly France and Italy. In Italy, where up to the last few years truffles only grew naturally, the artificial cultivation of this fungus as is practiced in France is being established in suitable regions. The following figures show the present importance of this cultivation in the two countries. According to French statistics, production in that country in 1931 was 4 400 quintals, while in 1905 it was 10 200 quintals. The most productive Departments are, in order of importance; Vaucluse, the Basses-Alpes, Lot, Dordogne, Drôme, Aveyron, Charente and Lot-et-Garonne. Production, for example, in Drôme may be estimated at an average of 46 000 kg. per annum. Taking 75 francs per kilo as a basis, which appears to have been the average price paid in 1933, a total revenue of 3 450 000 francs was obtained by truffle growers in that Department.

The countries importing truffles from France are: Sweden, Denmark, Germany, Belgium England, the U. S. A., and, before the war, Russia.

England takes a great part of the production: about $\frac{1}{3}$.

Production in Italy is at present rather low: about 100 000 kg. per annum, that is, $\frac{1}{4}$ of French production. In Italy production is natural as at present there are no real artificially produced truffle beds, Italy, however, exports small quantities each year to France and, a few years ago, the black truffles of Norcia and Spoleto were bought by French traders, prepared on the spot and sold in France as Périgord truffles.

Truffles have been known from ancient times and certain species were much appreciated by the Greeks and Romans. THEOPHRASTUS, in 300 B. C., gave

them a name which was based on the popular belief that truffles were produced by thunder. PLINY considered this fungus as a miraculous plant as, according to him, it grows without roots. It was only in 1710-1711 that TOURNEFORT discovered the spores. They are described by MICHELI in 1719, but, according to a popular belief at this time, the spores became truffles simply by growth, owing to the fermentation of the soil, root excretions and the production of galls by insects.

It was finally owing to the work of several botanists, among them DE FERRY DE LA BELLANE, GRAMMONT DE L'ESPAUD and MATRUCHOT, that the mystery of this plant was made clear.

The fungus belongs to the family of Ascomycetes, being subterranean it is classified as hypogean. At the time of germination, the spores produce filaments which constitute the mycelium and where the plant generates truffles. These very fine filaments terminate in suckers which attach themselves to the rootlets of suitable trees. The truffle is the organ carrying the spores which produce the mycelium.

SPECIES CULTIVATED IN FRANCE AND REGIONS OF PRODUCTION.

There exist edible species of truffles and inedible which are, however, harmless. The principle edible species are the following:—

The truffle with black spores or Périgord truffle (*Tuber melanosporum*), which is brownish black, covered in warts and with black violaceous flesh when ripe; it is the size of a small hens egg, ripens in autumn and is the most sought after.

Burgundy truffle (*Tuber uncinatum*). Brown flesh, average size, agreeable odour, ripe in autumn and found in Burgundy and Champagne.

Winter truffle (*Tuber brumale*). Slightly blackish and the size of a nut.

White winter truffle (*Tuber hiemalbaum*). White flesh, musky taste and of rather inferior quality.

Summer truffle (*Tuber aestivum*). Irregular tubercles, the size of a nut, slightly blackish skin with large warts. It is a good species of the south of France.

The most important markets are:—for Vaucluse, those of Apt, Carpentras, Valreas and Richerende; for Drôme the principle centres of production are the cantons of Grignon, St Paul-Trois Châteaux, Nyons, Rémuzat, Buis-les-Baronnies and Sederon; in Périgord, Périgueux and Sarlat. In Vienne, Loudon. The Basses-Alpes, Angoumois, Poitou, the Côte D'Ore and Burgundy are also truffle producing regions.

SPECIES CULTIVATED IN ITALY AND REGIONS OF PRODUCTION.

Climatic conditions in Italy are very favourable for this production. The principle truffle growing regions areas follows:—

The white truffle called "Alba" (*T. magnatum*) grows in the district of Monferrat in Piedmont. Verona, Vicenza and Belluno in Venetia and Voghera,

Bobbio, Cremona and Brescia in Lombardy are also producing regions. The reclaimed lands of Ferrara produce truffles similar to those of Piedmont. The centres of production of the black truffle (*T. melanosporum*) are Spoleto and Norcia. Sardinia provides the species *Tuber arenarium*. It is interesting to note that in 1933 Professor SELLA, Director of the Italo-German Institute of Marine Biology at Rovigo (Istria), communicated to the *Nuovo Giornale Botanico Italiano* the existence of *Tuber magnatum* Pico, or white Piedmont truffle, in great abundance in Istria. Professor O. MATTIROLO has found that the Istrian truffle has the same diagnosis and the same organoleptic characters as the Piedmont truffle. Up to that time it had been thought that the production of white truffles was confined to the valley of the Po.

The principle centres of production found in Istria are as follows: Valley of the Foiba, between Pisino and Burotto and between Novacco and Cerreto; valley of the Rozzo; valley of the Fiumera. The following edible varieties have also been found in Istria: *Tuber Borchii* at Lanischie, fructifying in February-March, also *Tuber brumale*, and near Trieste; *Tuber melanosporum*.

A fact which is little known is that there exist other species of truffles, generally of a pale yellowish colour, in Sardinia and Sicily and particularly in Lybia. The Lybian truffles, however, are classified botanically in the genera *Terfezia* and *Tirmania*. They have no symbiotic relation with trees; they live symbiotically with small annual plants and consequently, instead of attaching themselves to the roots of a single tree, their mycelium develops in the soil over a wide area, wherever, in fact, plants grow which are favourable to symbiosis. These plants belong to the genus *Helianthemum*. In various places in Sicily where *Terfezia* grows the host plant is *Helianthemum guratum*. Several species of *Terfezia* grow in Lybia, among others, *T. Boudieri*, *T. Metaxasi* and *T. Clavereyi*; the presence of *Tirmania ovalispora* has also been recognised. All these *Terfezia*, or yellow truffles, are eaten by the Arabs who also feed them to their animals.

In other countries truffle production is very limited. England has one species: *Tuber aetivum* which is found chiefly in the beech woods in Northamptonshire. It is blue-black, round and covered with polygonal warts; the flesh, is white when unripe becoming ochre colour and then brown with whitish, branched markings when ripe.

Tuber melanosporum does not exist in England.

Brandenburg, and Saxony in Germany produce a certain amount of truffles. In Bavaria, *T. melanosporum* is known by the names of «Hansbrun» and «Truffevrai».

In Spain, *T. melanosporum* and *T. magnatum* are found.

INFLUENCE OF SOIL.

Truffles develop preferably in argillo-calcareous soils. If the soil contains a little silica, is rather stoney, permeable and of no great depth, truffles become larger. The productive truffle beds of Vacluse contain 34 to 38 % limestone mixed with clay and small quantities of sand. In soil poor in limestone, truffles

will grow, but they have a musky taste. Truffles will not grow in very deep soils, as the roots of the trees favourable to their development develop downwards instead of spreading out under the surface.

According to BOREDSON, the secondary, but constant, constituents of all truffle producing soil are magnesium in the form of carbonate, organic matter in decomposition, phosphates and iron oxide. It appears that iron oxide has an important influence on the taste and odour of the fungus.

Tuber magnatum, very common in Istria and Piedmont, prospers in argilocalcareous soils and it is interesting to note how in those two regions the presence of this fungus is strictly limited to localities where there are outcrops of limestone. The great difference in the content in limestone between the white soils of northern Istria and the red soils of southern Istria is the principle cause of *Tuber magnatum* being confined to the first of these two regions. There is an analogous distinction in Piedmont between the right and left banks of the river Po; the first is highly productive while the second is almost unproductive.

The soils favourable to truffles produce the following plants:— oaks, hawthorn, sloes, nuts, junipers, brambles, elders, thistles, lichens, mullein, yarrow, hawkweed, orpine, wild thyme, thyme and rosemary.

INFLUENCE OF CLIMATE.

Generally speaking, the climate which is suitable for truffles is also suitable for vines. The altitude differs according to regions; thus, in Provence on Mont Ventoux and in Dauphiny, *Tuber melanosporum* is found up to an altitude of 900 metres. In Italy *Tuber magnatum* is found on the table lands and mountain necks up to 500 metres, while *Tuber mesentericum* grows at 1700 metres under the beeches in Southern Italy and *Tuber melanosporum* up to 800 metres and more in Umbria. The aspect is of considerable importance. Production in soils with a north aspect is inferior in quality and quantity. With regard to light, it has been noted that in the narrow valleys where the sun does not penetrate truffles do not grow and that in deeply shaded soils truffles are only found on the outskirts, that is, where the sun and light can enter. With regard to rain; the July and August storms are the most beneficial. Production is in close relation to the hydrographic system. This relation is very marked, for example, in Istria. South Istria with its' completely subterranean hydrography is not a productive region, while north Istria with its' superficial hydrographic system is a region of abundant natural production.

Excessively dry years, and particularly those in which rain is lacking during the summer, correspond to the years when production is nil. The favourable influence of water on production is well known to the farmers of Vaucluse who for a considerable time now have irrigated their truffle beds by means of scientific systems of canalisation. Also in Umbria, the farmers often water their natural truffle beds. The results are always good. A few millimetres of water distributed two or three times during the hot July and August weather is sufficient. On the other hand, the autumn rains have a harmful effect on the development of truffles.

In 1934-35 production was particularly abundant owing to the frequency of summer rains, but, on the other hand, truffles have never had so little taste. This phenomenon resembles that found by Professor MATTIROLO in Piedmont with apples which, in the same year, were very tasteless. A rainy summer and autumn, accompanied by low temperatures, seem to have been the cause. Moderate cold appears to be favourable to the maturation of the fungus.

It is interesting to note that, with regard to humidity, the genus *Terfezia* differs greatly from the real truffles (*T. melanosporum*). *Terfezia* grows in regions with long periods of summer drought. As it lives in symbiosis with annual plants which dry up at the beginning of summer, the mycelium of *Terfezia* cannot resist the dryness of this period if, at the end of the rainy season, it does not produce long and compact bodies capable of maintaining life during the summer drought.

SYMBIOTIC PLANTS.

Among the trees most favourable to the symbiotic development of the fungus, the foremost is the oak tree. The species of oak seems to be of less importance; many productive truffle beds are formed by half deciduous oaks and half evergreen oaks, to which the truffles adapt themselves. Thus the oaks that are chiefly used in French cultivation are:— *Quercus Robur* var. *sessiliflora* and var. *pedunculata* (deciduous); *Q. Ilex* and *Q. coccifera* (evergreen).

In Italy the deciduous oaks more resistant to cold (*Quercus Robur* var. *sessiliflora* and var. *pedunculata* «farnia») are found chiefly in Piedmont and the valley of the Po, while the evergreens (*Q. Ilex* «leccio W and *Q. coccifera*) are found in Liguria and the centre and south of Italy. Among the trees living symbiotically with white truffles in Istria, must be mentioned the poplar, willow, British oak, juniper and white spruce (*Abies pectinata*).

NATURAL AND ARTIFICIAL TRUFFLE BEDS.

In places where the necessary conditions of soil, climate and vegetation are united truffles grow naturally, it may be in a wood or at the foot of isolated trees. The area of production may be recognised easily as all vegetation disappears round the tree, the grass dries up and circles of arid soil form which give the appearance of having been burnt. This circle increases yearly as the root system of the tree spreads. The death of vegetation is due to the fact that the mycelium invades the roots of herbaceous plants which, not being able to resist, perish.

Where the trees already exist and climatic and soil conditions are favourable, truffle beds may be established by bringing earth containing spores of the fungus to the foot of the tree and by improving the physical condition of the soil. This practice, already extensively followed in France, has been introduced into Italy where Professor FRANCOLINI has been able to render certain

natural truffle beds near lake Piediluco productive by simply improving the physical condition of the soil.

Truffle beds may, however, be established wherever the soil and climate are suitable; it is, after all, this artificial cultivation that has given such an impetus to truffle growing in France.

In Italy, up to the war, production was solely natural. With a view to studying the conditions of vegetation of the black truffle in Italy, Professor FRANCOLINI, assisted by Professor MATTIROLO, established a trial field for this fungus at Porretta (Spoleto) in 1922. In spite of the promising results obtained, it does not appear that up to the present many artificial truffle beds have been established in Italy with *Tuber melanosporum*.

Artificial truffle beds for growing *Tuber magnatum*, white Piedmont truffle, have not yet been established in Italy though Professor MATTIROLO and Dr. PORTA have carried out trials in the Montferrat district by planting isolated truffle trees. These trials have shown that the cultivation of *Tuber magnatum* may be as successful, and even more so, than that of *Tuber melanosporum* as trees such as poplars and willows, which develop rapidly, adapt themselves well to symbiosis with this variety.

These two types of trees are to be preferred in clay soils of alluvial origin situated in the plains, while in the hills and mountains the varieties of oaks are preferable. Professor MATTIROLO recommends for poplars a spacing of 10 metres between the rows and 7 to 8 metres between the trees. Intercalary cultivation of *Tuber melanosporum* may be practiced with advantage, the mycelium being less harmful to herbaceous plants than that of *Tuber magnatum*.

It would be a very simple matter to establish the cultivation of *Tuber melanosporum* in the districts where this fungus grows in the natural state. The following are the conditions, in broad outlines, necessary for establishing an artificial bed:—

As soon as the soil has been prepared, by a slight cultivation, trees should be chosen which give the most truffles in the natural state in the district where this cultivation is to be established. If oaks are required, acorns may be sown; experience has shown that the earliest and most abundant production is obtained by sowing in lines preferably running north and south. The distance between trees should be such that the soil is not too deeply shaded: 8 × 6 metres for evergreen oaks and 8 × 10 metres for deciduous oaks appears to be the appropriate spacing.

These spacings permit intercalary cultivation (wheat, barley, rye, lucerne, clover) for the first few years. Oats are never used as they seem to have a disastrous effect on production. In France, on Mont Ventoux, lavender is chiefly used and in Apt, vines.

Herbaceous cultivation automatically comes to an end towards the 6th year when the truffle bed comes into production (for vines a duration of 10 to 15 years is the maximum).

Truffle production will gradually increase up to giving a normal production between 10 to 15 years, it then decreases up to 20 years; under young oaks production begins a little later, but lasts for as much as 30 years and even more.

The work of upkeep consists of lightly ploughing the soil and pruning the trees so as to encourage a horizontal development of the branches. Trees delaying production must be topped or, better still, rebudded. The use of fertilisers is also to be recommended as they hasten and increase production. Experiments have shown that after 4 years when the truffle begins to appear, farm manure or any other organic manure becomes harmful and prevents production; chemical fertilisers give better results. Trials carried out in 1934 by M. ZACHAREWICZ, Director of Agricultural Services, Vaucluse, on the lands of several farmers in the district, permitted the following conclusions to be arrived at: — That nitrate of soda hastens maturity and is therefore suitable for the truffle beds in the mountains where the truffle ripens late: that fertilisers should be applied only in the second fortnight in April; that vines associated with truffles may be maintained in growth and bearing by the application of chemical manures; that there is nothing to prevent the establishment of truffle beds among established vineyards manured annually with chemical fertilisers: that gypsum is to be recommended in soils poor in lime in order to avoid the production of inferior or faulty truffles.

The following is a satisfactory complete fertiliser (per oak tree): — sodium nitrate 300 g — potassium chloride 400 g — superphosphates 2 kg — gypsum 1 kg.

Fertilisers should be applied in April and lightly dug in.

Another practice regulating truffle production is watering. In July and August, at the time of incubation of the fungus, the soil needs a certain degree of freshness which in years of drought can only be obtained by irrigation.

HARVESTING TRUFFLES.

Many methods are used for collecting truffles; the disposition of the grass at the foot of the trees may show if the truffle beds are in production; the appearance of the soil will indicate truffles which develop near the surface and by raising the soil produce small crevices.

Truffle production results in some modifications in the leaves of oaks and poplars whereby experts can recognise the presence of truffles; the leaves are smaller, narrower and slightly yellow. The presence of the yellow truffle of the genus *Terfezia* also produces modifications in the host plant. Thus in Sicily, the *Helianthemum* host plants are larger and much more hairy than is usual and often do not produce seed, these characteristics showing the presence of the yellow truffle.

The black truffle (*T. melanosporum*) may also be detected by the fact that in the early morning and evening swarms of small yellow flies circle over the place where truffles are growing in the interior of which they deposit their eggs. In Vaucluse, pigs are used for hunting truffles or else dogs which are soon trained for this purpose on account of their highly developed faculty of scent. In Italy dogs are chiefly used as they are more resistant to fatigue and therefore more adapted to hunting truffles in beds which are distant from each other as is the case in that country. The dogs used in Italy are chiefly water spa-

niels and griffons; in France small dogs are used which are cross-breeds between sheep dogs and griffons.

The characteristic taste and odour of truffles develop at the moment of complete maturity; according to the species, this epoch of maturation, and consequently the harvest, varies. Thus, in France, the best truffles are gathered from November to the end of February as these attain their maximum size and quality during the winter.

In Italy, *Tuber melanosporum* and *T. brumale* are gathered from December to the end of March; *T. magnatum* at the end of the summer and in autumn.

With regard to yield, 1 hectare produces an average of 100 kg of truffles.

PRESERVATION.

If the period for preservation is short, it is sufficient to put the truffles in powered clay, dry sand, rice, cork dust, coal dust; they may also be kept in refrigerators, taking care that they do not become frozen. For a long period of preservation a process of true conservation should be employed (oil, alcohol, etc.); the best method is the Appert process which assures an almost indefinite period of conservation without alteration in the taste.

NUTRITIVE VALUE.

The truffle is a food stuff with a high nutritive value and may be considered as a complete food. According to KOESNIG, its composition is as follows: — water 71.1 %; protein matter 7.6 %; fats 0.5 %; non nitrogenous extractable matter 16.6 %; crude cellulose 6.4 %; ash 1.9 %. According to CHATIN French truffles have a content in dry matter of 20.8 to 25 % in the fresh state, which matter contains 4 to 9 % nitrogen and 5.6 to 11.2 % ash. With regard to the nitrogenous components, it appears that a great part of the nitrogen is in a non-protein form.

POSSIBLE USES FOR TRUFFLES.

On account of the characteristic odour of this fungus, attempts have been made to utilise it in the making of perfumes. It has been likened to that of strawberries and vanilla. It has also been said that truffles have a musky odour with a suspicion of essence of lavender; that there is a similarity between the odour of truffles and that of certain plants and that the musky truffles have a perfume analogous to that of certain marine algae of the Florideae group, or red algae.

Because of its originality, it is difficult to classify the perfume of truffles in a determined category especially with regard to that of the black truffle, *T. melanosporum* though there are many other Tuberales belonging to the genus *Tuber* or similar genera the perfume of which is nearly the same as that of the black truffles, and others in which the perfume is very different. *Tuber montanum*, *T. Moretti* and *T. renati* have a perfume resembling that of the

black truffle; the odour of musk is mixed with that of the truffle in *T. moschatum*, *T. uncinatum* and *T. brumale*. Other *Tuber* have an odour which does not in any way resemble the true odour of truffles, thus, *T. panniferum* has a slight acetic odour; *T. bituminatum*, *T. piperatum* and *T. bellonae* smell of bitumen; *T. magnatum* has an alliaceous odour and *T. aestivum* has a particular odour rather similar to that of yeast. The *Terfezia*, *Tuberacae* growing chiefly in North Africa, have generally less odour than the *Tuber*.

Truffles impart their odour to the alcohol they are preserved in. They have also been used for preparing certain liquors, such as ratafia of truffles which is brandy in which truffles, cut up into morsels, have been soaked with a little vanilla. Infused in alcohol at 96° for long periods, they give a tincture which is extremely strong but at the same time sweet which may be utilised in the preparation of extracts such as tincture of musk, chive, amber, etc; In the tobacco perfumes of Spain, "peau d'Espagne", the sweetening effect is remarkable; in "chypres", ambers and analogous compositions, the bouquet is greatly increased if the proportion of truffles is sufficient; in flower perfumes, the proportion can only be very small. In all fancy compositions, however, it appears that the truffle may be utilised in the same manner as, for example, clary.

Truffles may also be used for improving brandy, cognac, liquers, etc.

EXHAUSTION OF TRUFFLE-BEDS.

The yield reaches a maximum towards the 10th year, subsequently diminishing until it comes to an end at the end of 20 or 30 years, according to the species of tree. For reasons not yet completely understood, the mycelium disappears and grass grows round the trees. The diminution in yield is certainly connected with the space available to the tree, in fact, natural isolated truffle beds become exhausted less rapidly. It has been remarked above that the productive zone forms a circle round each tree which increases as the oak grows and its' roots spread. It has also been noticed that truffles are generally found within the radius of the crown. When the crowns in artificial truffle beds begin to meet, production ceases. It is therefore necessary retard as much as possible the moment when the crowns meet by sufficient spacing in the rows and by subsequent judicious clearing. Various explanations have been given for the phenomenon of the cessation of yield. According to some opinions it is due to the destruction and gradual disappearance of substances contained in the soil necessary to the life of the fungus; to others, the soil becomes poisoned by the mycelium itself; others again, think that it is due to the exhaustion of the rootlets which support the mycelium. None, however, of these explanations are completely satisfactory as sometimes the exhaustion is complete and sometimes it is only a period of repose after which the plant begins to produce again; it often happens that a part of the roots are in repose while the other half continues to produce. Various methods have been tried to regenerate production in a truffle bed which is becoming exhausted. For

this purpose the trees have been re-budded, about 300 gm. of ammonium chloride has been spread round the trees, but the best way to prevent exhaustion is to keep large spacings between the trees.

Truffle beds are sometimes invaded by a species of yellow fungus which destroys the truffles; the interior of the fungus has an objectionable odour, is as black as soot, is about the same size as the truffle and grows in the truffle beds exactly like a truffle. It undoubtedly destroys the mycelium. This parasite, commonly called in Quercy and Perigord "nez de chien" (dog's nose), has the peculiarity of appearing at the beginning of the establishment of the truffle bed or else when the bed is beginning to become exhausted. Among animal parasites of the truffle, the most important is *Helomiza lineata*, a small fly which lays its' eggs in the truffle at the moment of maturity.

From the economic point of view, the cultivation of truffles seems to have a prosperous future; like all luxury articles, consumption of this fungus developed greatly after the war and the market increased. It is interesting to note the methods of exploitation which have been applied and the laws that have been passed for the protection of truffle beds in order to assure regular production and to permit the introduction of this cultivation into suitable regions. Direct exploitation by the owner gives the best results. Another method consists of employing a hunter, accompanied by an animal, to collect the truffles for which he is paid daily. With regard to woods under a system of forestry control either of the State or the Communes, the custom in France is to rent them, the area being apportioned by public auction. This method is very advantageous for the peasant. Owners and tenants in France are protected by the law against unauthorised hunters. Cultivation of truffles being in the nature of a veritable agriculture enterprise, those who collect truffles without being authorised to do so are punishable under Art 388 of the Penal Code. In order to protect their products, French truffle growers have formed Syndicates. Up to 1931, the more important commercial newspapers had only published one market-price for truffles that of Sète, since which, thanks to the action of the Syndicate of truffle growers of Cahor, the Paris daily newspaper *Journée Industrielle* has published the market prices of Terasson, Belvès, Thénon, Sarlat, Cahors, Périgueux, Sorges, etc.

Truffle growers, on the other hand, have come to decisions limiting the zone of production and the name of origin, for example, the action of truffle growers of Lot, Dordogne, and Corrèze with regard to the protection of the name of origin of the "Périgord truffle". In Italy nothing has yet been done for the protection of truffle cultivation and a law on this matter will be necessary for this cultivation to enter into the agricultural organisation of the country in which case Italian truffles would be come a serious competitor with French truffles. The Ministry of Agriculture in Italy has, however, realised the utility of developing this cultivation in relation to reafforestation and, as a beginning, a plan for reafforestation and truffle growing has been entrusted by the Ministry to Professor FRANCOLINI, Director of the Itinerant Chair of Agriculture of Terni; this scheme of afforestation, which concerns the region of Pietralata, is in course of execution.

Among the means that may be employed for developing bad land, truffle growing should be considered as one of the best. The climates of France and Italy are most suitable. In addition, private and public interest are in agreement on this subject with regard to afforestation, whether it is a question of truffle growing for reafforestation, or reafforestation for truffle growing. If, in all arid zones, the cultivation of this fungus was developed, it is obvious that it would be to the public benefit seeing that a truffle bed of 1 hectare, in full yield, gives an annual return of from 2000 to 3000 francs.

D. KALTENBACH.

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MILK RECORDING IN ARGENTINA

When editing the chapter on *Argentina* for the French edition of the Monograph Milk Recording throughout the World (*) only incomplete information was available on milk recording in that country, but shortly after the publication of the said edition the International Institute of Agriculture received two documents on the subject, enabling the following review to be given of milk recording in Argentina in a manner more complete than that which appeared in the Monograph and in the English edition.

DEVELOPMENT OF MILK RECORDING IN ARGENTINA.

Milk recording was introduced into the farms of the joint stock company, 'The River Plate Dairy' at Germanía, province of Buenos Aires, on 24 September, 1911 and was under the supervision of the Ministry of Agriculture. The work was first commenced in the 12 farms of that Company on 6 cows per farm, that is 72 cows in all, and it was not until later on that milk recording was undertaken on a larger scale in the same circle.

On 1 March, 1912, work was started in a second circle at Belleville, province of Córdoba. The conditions were the same as in the preceding case and the work was carried out in the farms of the same Company.

Four other circles of recording were inaugurated in the following years, in the provinces of Buenos Aires and Santa Fé, but they were soon obliged to suspend their activities as the Ministry ceased to accord them financial aid.

It was only in 1924 that 'official' milk recording was started again, based on a Ministerial Decree and, this time, under the direct control of the Ministry of Agriculture.

Milk recording by the 'Sociedad Rural Argentina', called 'private recording' developed to a greater extent than the official recording by the Ministry of Agriculture. It was started in 1914, but at that time was only short term recording and during the first year only 36 cows were recorded. Long term recording was introduced by the 'Sociedad Rural Argentina' in 1922 and was carried out on 521 cows. In 1924 milk recording began to develop to a greater extent.

(*) Under the title of "the Present State of Milk Recording throughout the World" in this *Bulletin*, February, 1935 (p. 86-112) is published the first chapter of the general part of this Monograph.

Development of Milk Recording in Argentina.

Years	Number of recorders	Number of herds recorded	Number of cows recorded	Number of recorders	Number of herds recorded	Number of cows recorded
1924	6	14	...	4	45	4 192
1926	6	22	...	4	56	5 171
1928	6	20	...	4	57	5 543
1930	6	...	...	4	57	6 755
1931	6	...	1 154	4	57	5 567
1932	2	...	1 921	2	57	5 343
1933	2	33	2 556	2	20	1 294
1934	2	13	1 058	2	20	1 351

The considerable diminution in the official recording after 1933 is due to the fall in milk prices on the one hand and, on the other, to the fact that both the Ministry of Agriculture and the Sociedad Rural ceased to carry out the work of milk recording free of charge and demanded rather large contributions from the farms recorded.

ORGANISATION OF MILK RECORDING.

Up to 1934 official recording was under the direction of the Dairying Division of the Ministry of Agriculture, but from that year the Committee for the Organisation of the Dairying Industry took over the supervision of milk recording.

Official recording was carried out by officials of the Ministry of Agriculture, at the farms applying for recorders, in accordance with the requirements established by the Ministry. Recording by the Sociedad Rural is organised on a similar basis.

METHODS OF MILK RECORDING.

Recording by the Ministry of Agriculture is carried out once a month by a Recorder and includes all the milkings of the recording day. The period of recording is limited to the duration of lactation and should never exceed 365 days.

The Recorder establishes the quantity of milk given by each cow during the recording day and the fat content according to the GERBER method.

Cows registered for recording are ear marked with numbers which correspond to the numbers in the official recording register.

The Sociedad Rural Argentina make a distinction between the short term and the long term recording, leaving it to the breeder to choose which method should be applied. Short term recording, however, has become of less importance during the last few years, in fact, in 1934 only 6 cows were recorded by this method.

Short term recording is carried out in a single period of 48 hours by a Recorder of the Sociedad Rural Argentina at a time chosen by the breeder. It consists of determining the quantities of milk and the fat content given by each cow during that period. Short term recording cannot take place before the 14th day following calving, but it can be repeated as many times as the breeder desires during the same period of lactation.

Long term recording is carried out once a month by a Recorder who establishes the quantity of milk, and the fat content, given by each cow in the herd. It commences on the 7th day after calving and includes the whole period of lactation up to a maximum of 365 days. Each of the Recorder's visits lasts 24 hours, but the Recorder should make sure, before commencing recording, that the cow had been milked dry at the last milking and at what times of the day the previous milkings have taken place.

During recording, the Recorder determines exactly, as in the official recording, the quantity of milk given by each cow and the fat content according to the GERBER method.

Daily or bi-monthly recording by owners of cows is optional, but the Sociedad Rural Argentina reserves the right to recognise or not the results of recording carried out by the owners themselves.

The regulations of the Sociedad Rural Argentina for milk recording also provide for other forms of recording which are optional for the breeder, but they do not appear to be of any practical importance.

CALCULATION OF RESULTS OF MILK RECORDING.

In the short term recording by the Sociedad Rural Argentina the quantities of milk, and the fat content, determined during the 48 hours of the Recorder's visit constitutes the final result of this recording.

In the recording by the Ministry of Agriculture and also the long term recording by the Sociedad Rural, the records made by the Recorder are considered as the daily average for the period between one visit and another. By multiplying the result of one visit by the number of days in a period the monthly result is obtained and the annual result for each cow by adding up these results.

In recording by the Sociedad Rural, the owners also make their own calculations for establishing the annual result of recording, and these are compared with those of the Sociedad Rural.

REGISTRATION OF RESULTS OF MILK RECORDING.

The quantities of milk and the fat content determined during a Recorder's visit are first entered in forms called 'collective' and issued in duplicate. On these forms are entered all particulars regarding each cow, each one on a separate line. One copy remains with the farm recorder and the other is sent to the Sociedad Rural Argentina.

The figures entered on the collective forms are transcribed on to the individual sheets of each cow tested.

UTILISATION OF RESULTS OF MILK RECORDING.

Cows which have reached the established standards of production during the recording can be entered in Registers of Merit if they are pure bred cows already entered in a Herd Book, and in the recording register if they are not entered in a Herd Book. The Sociedad Rural Argentina groups the cows into different classes and categories according to their age, breed and the number of milkings per day. The standards, that is, the minimum production for entry in one of the above mentioned books, differ for each class and category. They also differ according as to whether it is a question of long or short term recording.

Milk recording certificates for cows recorded are issued by the Ministry of Agriculture and by the Sociedad Rural in which are given the results obtained by the cow in question during the period of milk recording. Certificates are also given for the calves and bulls whose dams have been recorded provided that these animals have been entered in the milk recording register not later than 30 days after their birth and that they are ear marked.

The monthly results of recording are communicated to owners on special forms.

In all cases the results of recording are used by breeders for purposes of selecting animals for reproduction.

S. T.

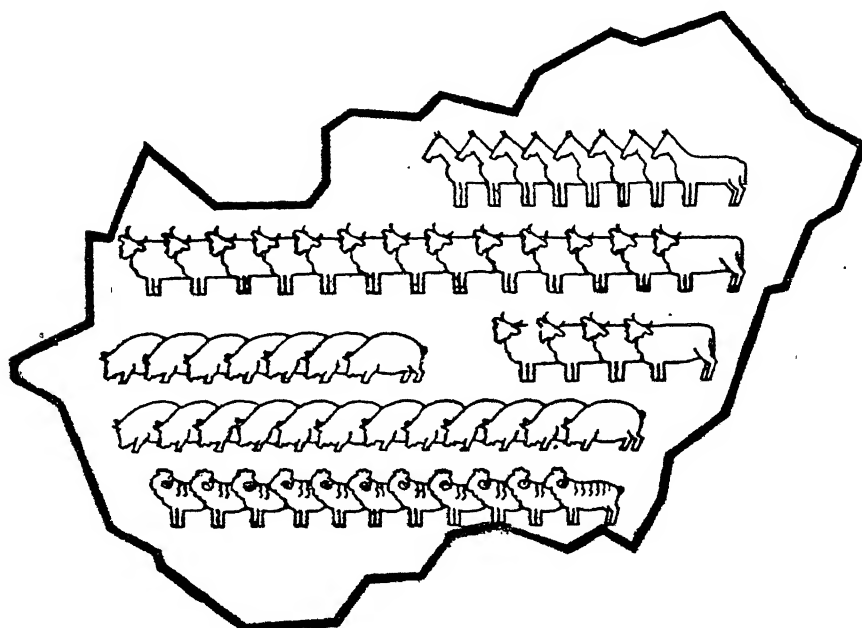
PRESENT STATE OF THE DAIRYING INDUSTRY IN VARIOUS COUNTRIES: (3) HUNGARY (*).

After cereal production, the milk industry is the most important branch of agriculture in Hungary. The supply of milk to the population is bound up with the larger questions of alimentation and social hygiene. Milk production represents a sum of about 185 million *pengő* annually which is sufficient to show its economic function within the general framework of national economy. More than 17 million hectolitres have been produced and the increasing development during the last few years proves that the maximum has not yet been reached. A considerable improvement has also taken place with regard to quality. There are now 2000 large dairies in Hungary one quarter of which are on a co-operative basis with a membership of about 70,000, and handle the milk of more than 100 000 cows, or, in other words, more than 3 700 000 hectolitres per annum. The law prescribes a fat content of 3.5 % but actually the content is very often higher than this figure.

(*) The first articles of this series, on France, appeared in this *Bulletin*, 1934, No. 11 (p. 530-541); the second, on Italy, in this *Bulletin*, 1935, No. 4 (p. 207-221).

In Hungary nature is not at all favourable to the growth of grass and forage plants and milk production is therefore chiefly based on the cultivation of sown forage crops and the production of concentrated foods, the area of grassland representing only 7.2 % of the total area of the country and of this

Diagram indicating the proportions of the principal kinds of live stock in Hungary in 1933.



Each unit represents 100 000 animals.

percentage only 10.8 % is pasture. Merit is therefore exclusively due to the Hungarian farmer for having been responsible for the development of the dairying industry up to the standard at which it has arrived today, which is sufficient to supply to needs of the population in milk and dairy products, and even permits exportation.

I. — DAIRYING SPECIES AND BREEDS.

In 1934, Hungary possessed 1 671 884 head of cattle, about 900 000 dairy cows, 5828 buffaloes, 1 087 464 sheep and 25.870 goats. More than half the cows of the red spotted type (427 571) are found in the Transdanubian regions where the dairying industry predominates and where on account of the favourable conditions for milk and forage production, this branch of agriculture has devel-

oped to a greater extent. The total number of cattle may be distributed as follows among the various types of farms:—

Farms of less than 20 kadastral holds	68 %
» of 20 to 100 kadastral holds	17 %
» of 100 to 1000 kadastral holds	8 %
» more than 1000 kadastral holds	7 %

It will be seen from this Table that milk production in Hungary is chiefly in the hands of small farmers. It must not be forgotten that it is of more or less recent date, not having begun to develop until the end of the 19th century.

I. — CATTLE.

In Hungary buffalo bulls are used as draught animals and the cows give excellent milk, rich in fat.

Up to the middle of the 19th century, cattle-breeding was confined exclusively to the native types of cattle. The total number of Hungarian red spotted cattle includes the *original Simmenthal* breed, the *Simmenthal* bred in the country and the *Hungarian red spotted* breeds. The first and second, that is pure bred Simmenthal of Swiss origin and Hungarian Simmenthal improved by crossings with pure bred Simmenthal bulls for at least 6 generations, are found in the large and medium sized farms. The small farms breed the Hungarian red spotted cows obtained by crossing Hungarian cattle with the Simmenthal breed with triple purpose (milk, meat, draught) which give a higher yield in milk.

The importance attached to the dairying industry is shown chiefly by the increasing reduction in the number of grey Hungarian cattle (the breed of the steppes). Only 50 years ago this breed represented 80.3 % of the total number of cattle, while today 83 % of this total is constituted by red spotted cattle. The brown Alpine breed and the breeds of the plains are found in only relatively small numbers.

In 1920, the average annual yield per cow recorded was 1 768 kg. of milk and 68.3 kg. of fat: in 1931, it was 3 450 kg. of milk and 128.5 kg. of fat.

The yield given by the Hungarian Simmenthal exceeds that of the foreign breeds and approaches more nearly to that of the breeds of the plains. At the present time there are 30 000 cows, that is, 3.6 %, officially recorded. In order to be entered in the herd books, cows should give a minimum yield of 2 500 kg. of milk and 90 kg. of fat, and naturally the external appearance must be up to the same standard as required for other qualities. Since 1927, the Herd Book Commission has kept a register containing only the cattle which have all the requisite external qualities and the cows giving an annual yield of more than 4 000 to 4 500 kg. of milk.

In the Transdanubian region the Simmenthal breed predominates, while in the plains west of the Danube the breed of the steppes is chiefly found, on account of the drier climate.

2. — SHEEP.

According to an assessment made in 1933, the total number of sheep is 1 056 28. In 1911, the number was considerable higher, namely, 7 697 719. Sheep-breeding is therefore decreasing rapidly in spite of the fact that it has been practiced for centuries. The "Racka" is the oldest breed with a triple purpose. Merino sheep constitute about 90 $\frac{1}{2}$ of the total. Until recent times no great importance was attached to the milk production of Merino sheep, but after the fall in wool prices, and the increasing demand for ewes' milk cheeses and also on account of the desire to reduce imports of cheese, sheep-breeders directed their efforts towards milk production on a larger scale. The average yield in milk per ewe is from 0.2 to 0.5 kg. per day according to the season.

II. — LIQUID MILK.

Hungary produces a total of 1 652 694 litres of milk per annum, consumption being as follows:—

For feeding calves	201 600 000 litres, that is, 12.19 %
Milk consumed in the administrative area of Budapest	140 525 000 " " " 8.50 %
Milk consumed in the provinces, including the farms	1 073 067 000 " " " 64.92 %
Milk industries:—	
Cheese	65 000 000 " " " 3.93 %
Butter	172 502 000 " " " 10.46 %

As in other countries, Hungarian producers prefer to sell their milk for direct consumption. The principal market is the capital town in the neighbourhood of which milk production is intended exclusively for direct consumption. In Budapest about 460 000 litres of milk are consumed per day, that is, an average of 0.45 litres per capita.

The total production of milk, which amounts to about 1.5 milliard litres, has a commercial value of from 150 to 200 million *pengo*.

If the conditions for milk production are unfavourable with regard to the question of forage, the dairying industry also encounters great difficulties with regard to delivery of milk, the farms being very scattered. The distances between farms present greater disadvantages for the cheese industry than for the butter industry, cream being more easily transported.

Milk is sold as fresh, pasteurised, and bottled. In Budapest the delivery of milk is carried out chiefly by two large dairies equipped with modern installations: the Central Hungarian Co-operative Dairy and the Central Dairy of Budapest. There are also a large number of smaller or less up-to-date dairies. Up

to a few years ago the milk trade in the capital was free. At the present time it is dependent from the Hungarian Dairying Commission which is concerned with all questions regarding the delivery of milk in the capital and also in a certain number of towns and communes in the neighbourhood of Budapest (Greater Budapest) which has been declared a closed market for liquid milk, sweet and sour cream. The principle on which delivery of milk in these closed districts is based is that delivery should be made by a few central dairies which should, if possible, handle the milk of other producers. These central dairies are affiliated among themselves and compulsorily united in dairying Unions. The principal aim of these two Unions is to establish uniform contracts between milk producers and the central dairies.

As in other countries, the problem of utilisation of milk and reorganisation of the industry in Hungary is more acute where this industry is more highly developed. It is not possible to give an opinion as to whether a free or controlled market is the more likely to bring the milk industry out of the crisis through which it is passing, but there is no doubt that the second system is to be preferred.

III. — BUTTER PRODUCTION.

In 1929, milk production was for the first time greater than the requirements of the home market and the surplus was exported in the form of butter, 873 000 kg. having been exported in that year after which there has been a continuous increase and in 1933 exports exceeded 3 million kg. This is due in the first place to the excellent quality of the butter made in Hungary. For the last 10 years official stamps may only be applied for butter made in the factories under State control using only pasteurised cream of good quality and producing butter with a water content of not more than 14.5 % and a content of non-fat not exceeding 1.5 %. The control Bureau for butter supervises 36 butter factories which are the only ones authorised to export.

In 1932 there were 1 317 Stations for collecting milk and cream separation and 738 establishments for dairy products utilising 3 million litres of milk as follows:—

1 581 528	litres separated for cream.
238 081	» for cheese making.
15 351	» for other milk products.
1 191 905	» liquid milk for direct consumption.

Butter making in Hungary is chiefly in the hands of the Central Co-operative Dairy and several private dairies. Farm butter is of no great importance in Hungary.

Consumption is about 1 kg per capita. This very low figure is surprising when compared with consumption in other countries which varies between 5.1 and 8.2 kg per capita, but it must not be forgotten that in Hungary principally lard is used for cooking.

IV. — CHEESE PRODUCTION.

In the past cheese production was negligible in Hungary and could hardly supply 1/5 of the home market, the remainder being supplied by imported cheeses. Hungarian cheese, however, was of first class quality including types such as "Ovár", ("Magyaróvár"), "Pálpusztai", "Mosonmegyei" ("Illmitz") and "Dórypusztai". All these cheeses have an excellent taste, are buttery and are equal to the best types of foreign cheese.

In 1921, the cheese industry in Hungary underwent an unexpected development and at the present time supplies the whole of the home market. Cheese making is chiefly in the hands of private producers who buy the milk and make the cheeses in their own factories. There are also certain large estates on which the Emmenthal cheeses are chiefly made. As well as the cheeses of the country, all sorts of foreign types of cheese are manufactured in Hungary. The semi-hard cheeses, such as the "Magyaróvár" "Illmits", "Trappiste" are preferred to the soft cheese of the "Romatour" type or the French blue-mould cheeses which are only made in very small quantities in Hungary. Among hard cheeses a fairly good quality Emmenthal cheese is manufactured at the present time. The Dutch types of cheese, such as Gouda and Edam, are not greatly appreciated, while the Italian soft cheeses, such as Stracchino and Bel Paese are very popular.

Choice ewes milk cheeses have replaced the "Lipto" of Slovakia. At the present time other Slovakian ewes milk cheeses are made, such as "Osteyepka" and "Parenyca".

The following are some indications on the subject of Hungarian cheeses:

I. — SOFT CHEESES.

"*Dorypusztai*" is a kind of soft cheese first made by the VON DORV family half a century ago and who still continue to produce it by a method which they keep secret. This is one of the most popular of the soft cheeses. It is sold in cubes of 250 to 500 gm. The rind is fairly hard and reddish brown, the curd is pasty, and in ripening the almost liquid centre spreads until it nearly reaches the rind. This is a type of cheese intermediate between Romatour and Limburg and has a characteristically strong odour. When the rind is removed it may be spread on thin slices of bread and has a slightly bitter and very pungent flavour. The hard rind permits it to be transported and preserved which is not often the case with this type of cheese. Whole milk is used for its manufacture, 100 litres of milk giving 11 kg. of ripe cheese having a fat content of 47 % of the dry matter and a water content of 50 %.

"*Palpusztai*", which closely resembles "*Dorypusztai*", was introduced by HELLER in 1909. It is sold in cubes of 500 gm. It has no real rind, but is covered with a brown, sticky envelope which must be scraped off before the cheese is eaten. The interior is white with eyes. As this cheese ripens it becomes more liquid and has a taste and odour resembling "*Dorypusztai*",

but is not so easily preserved. From 100 litres of whole milk 11 to 12 kg. of cheese are obtained which is wrapped in metal paper.

Cream cheeses are not greatly appreciated in Hungary. There is one real Hungarian type which has developed recently. The season for cream cheeses is from November to the end of April. The rest of the year the cream cheese factories work exclusively for the Austrian market where these cheeses are also sold in summer. In Hungary ripe cheeses are preferred which can be eaten on this slices of bread while the semi-ripe cream cheeses are exported. Cream cheeses are sold by the "schok" (60 pieces) in boxes containing 2, 4, 5 or 8 "schoks".

In Hungary only curd from separated milk is used without the addition of casein, or albumin of whey.

2. — HARD CHEESES.

Mention must first be made of "*Magyarovar*" cheese, first produced by Professor UJHELYI, which is made in all parts of the country and closely resembles Tilsitt cheese. It is made in forms 28 to 30 cm. in diameter, 9 to 12 cm in height and weighing 4.5 to 5.5 kg. Its manufacture is very similar to that of Gouda, but it is harder. The fat content is 45 to 48 % of the dry matter and the average water content 43 %; the formation of eyes is irregular. From 100 litres of milk are obtained about 10 kg of unripe and 9 kg. of ripe cheese.

"*Mosonmegyei*" cheese is also known as "Illmitz", a district now belonging to Austria. The diameter is about 30 cm., height 7 to 8 cm and weight 3 to 4 kg. It is generally packed in metal paper. The rind is rather thick. From 100 litres of milk are obtained about 10 kg of unripe and 5 kg of unripe cheese. The fat content is at least 45 % of the dry matter and the water content about 46 %.

"*Trappiste*" is not a cheese of Hungarian origin, but the Hungarian "*Trappiste*" is a special type which in flavour and odour does not at all resemble the "*Trappiste*" of Bosnia. The forms are 15 cm in diameter, height, 5 to 6 cm. and weight about 1 kg. The rind is smooth and yellow as this cheese is often coloured. It is a little softer than "*Magyarovar*" and has less eyes which are more evenly distributed. The taste is mild and very agreeable, recalling that of fresh milk. The fat content is 45 to 48 % when made with whole cows' milk, while with a mixture of different milks the fat content is as much as 50 to 52 %. From 100 litres of milk are obtained 10 to 10.5 kg. of unripe and 9 kg. of ripe cheese.

With regard to blended cheeses, Hungary has contributed greatly to the development of this industry thanks to the work of O. GRATZ and his collaborators. At the present time there are 7 factories for blended cheese in Hungary.

Generally speaking, it may be said that the cheese industry has made considerable progress and it only requires a type of cheese with good keeping qualities in order to develop the export trade which at present is almost negligible.

V. — OTHER MILK DERIVATIVES.

With regard to *preserved milk*, condensed and dried milks are not yet manufactured in Hungary. In 1928 the imports of condensed milk were still 2248 quintals per annum, but in 1932 they had fallen to 633 quintals which were chiefly used by the chocolate industry.

One small dairy prepares *sterilised cream* in boxes.

In the past the production and exportation of casein was considerable. In 1930 it still amounted to 5075 quintals, while in 1932 it had fallen to only 153 quintals.

From 20 to 30 quintals of *lactose* are produced yearly.

E. GASSER.

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MISCELLANEOUS INFORMATION

PRESENT ORGANISATION OF AGRICULTURAL EXPERIMENT INSTITUTIONS IN RUMANIA. — Professor G. IONESCU SISESTI, Director of the Institute of Agricultural Research of Rumania, has forward the International Institute of Agriculture a report on the present condition of organisation of Agricultural Experiment Institutions. The information contained in this report, which is summarised below, is intended to replace that contained in the Monograph entitled « *Les Institutions d'expérimentation agricole dans les pays tempérés* », pages 154-157.

THE INSTITUTE OF AGRICULTURAL RESEARCH OF RUMANIA.

I. — Foundation and organisation.

This Institute was founded by the law of 4 May 1927 and modified by the law of 21 May 1932. It is a self-contained organisation comprising several Sections and central and provincial Stations engaged in various kinds of specialised work. The

activities of the Sections and Stations are co-ordinated according to a programme established by law and are directed towards a common end, namely, the improvement of agriculture in Rumania.

The administration of the Institute and a part of the Sections and central Stations are already installed in the new building of the Institute which is partially finished (16 Boulevard Mărăști). The other Sections and central Stations are for the time being, installed in premises, which will be given below, until the new building is completed.

II. — Sections and Central Stations.

(1) *Plant Improvement and seed control Sections.* — The headquarters and laboratories of this Section are situated at the Academy of Higher Agricultural Studies, 59 Boulevard Mărăști, Post Box No. 207.

This Section is engaged in the production of improved varieties of cultivated plants and produces, multiplies and supplies seeds of these varieties to farmers.

It is also entrusted with the control of the trade in seeds of forage plants by means of analyses after which the consignments of seeds intended for export or the home market are sealed and a label attached showing they have been examined.

The Section possesses an electro-magnetic installation at Baneasa where seeds of lucerne and clover belonging to farmers are cleaned of impurities and chiefly dodder.

This Section established genealogical registers of varieties of improved plants, analyses, all kind of seeds in the laboratories, and inspects the crops of farmers producing seeds.

Comparative tests are made each year by the Section in 30 trial fields situated in Olténia, Valachia and Dobrodja.

The technical staff consists of a chief of section, Professor A. MUNTEANU, and 5 assistants.

(2) *Phytotechnical Section.* — The headquarters and laboratories of this Section are situated at 61 Boulevard Mărăști. Studies are made on:— the soils in Rumania from the view point of their fertility and need of manure — methods of preparing the land most appropriate to the soils and climate in different parts of the country — the technique of cultivating each plant: seed, cultivation, harvest, conservation of products.

These studies are carried out in the laboratories, in a special installation containing 400 pots and in 30 trial fields situated in the regions with different climatic conditions.

The technical staff consists of a chief of section, Professor G. IONESCU SISESTI, an overseer and 5 assistants.

(3) *Phytopathological Section.* — Address, 61 Boulevard Mărăști. This Section is entrusted with the study of diseases and pests of plants and the means of controlling them.

Phytosanitary certificates are issued for products intended for export.

Farmers are informed of the presence of diseases of plants and their danger.

Direction are given, from a technical point of view, to the Plant Protection Service of the Ministry of Agriculture.

The technical staff comprises a chief of section, Professor Tr. SAVULESCU, a chief of laboratories, an overseer and one bacteriological assistant.

(4) *Chemistry Section.* — The headquarters and laboratories are at the Academy of Higher Agricultural Studies, Boulevard Mărăști 59, Bucharest.

Studies and analyses are made of the soils, manures, agricultural products and preparations used in agriculture.

The technical staff consists of a chief of section, Professor T. SAIDEL, and 2 assistants.

(5) *Section of Rural Engineering and Agricultural Machinery* (*). — This Section is in course of organisation. At the present time it consists solely of the Central Station of Agricultural Machinery and a Bureau of Rural Engineering. This Bureau is situated at 61 Boulevard Mărăști, Bucharest and the Machine Testing Station at Baneasa, 3 km distant from the Institute.

The Machine Testing Station makes comparative tests between the various types of machines and agricultural implements from the point of view of their construction, functioning and yield. Manufacturers are given directions on the modifications and improvements to be made and farmers are informed how to adapt the different machines to the soil, climate and economic conditions of the country.

The Bureau of Rural Engineering assembles the documentation to be used later for drawing up schemes for land improvement, such as irrigation and drainage. It also directs the Experiment Station of Pitariu, 50 km. distant from Bucharest.

The technical staff of consists a chief of the Machine Testing Station, M. R. HEGE, an overseer and 2 assistants, also an assistant of the Bureau of Rural Engineering.

(6) *Rural Economy Section* (61 Boulevard Mărăști). — This Section studies the organisation of farms and the earning capacity of different crops and systems of farming. For this purpose accountancy registers are kept for a great number of large and small farms situated in different parts of the country.

Enquiries are made into questions of general interest: indebtedness of farmers, price of land in all parts of the country, etc.

The technical staff consists of one chief of section, Professor N. CORNATEANU, one head clerk and assistants.

(7) *Milling and Bread-making Section* (61 Boulevard Mărăști). — This Section is entrusted with the analysis of cereals, especially from the view point of their bread-making qualities. An annual report is published on the quality of the harvest. The Section assists the authorities in the application of official measures for the control of milling and bread-making.

Technical staff: one chief of Section, Dr. A. ANDRONESCU, 4 assistants.

(8) *Chemistry and Oenology Section*. — This was formerly the Central Station of Agronomy. The headquarters and laboratories are at 22 Chaussée Kisselef, Bucharest.

Rumanian wines are studied here with a view to compiling a register. This Section assists in the application of the law against adulteration of wines. It analyses wines and other agricultural products and produces and supplies, on request, selected ferments for wine-making.

Technical staff: one chief of Section, Dr. E. RUSS, one overseer, one chemistry expert, 8 assistants.

(9) *Entomological Section* (61 Boulevard Marasti). — This Section studies the insects and animals which are useful or harmful to agriculture and also the means of controlling or protecting them. It carries out a phytosanitary control, from an entomological point of view, of products intended for export.

Technical staff: one chief of Section, M. KNECHTEL, 8 assistants.

(*) See the Monograph "International Directory of Agricultural Engineering Institutions", Rome, 1934, p. 54.

III. — Provincial Stations.

A. — *Plant Improvement and Seed Control Stations.*

(1) *Station of Cluj.* — This 1st grade Station is situated at 174 Rue Manastur, Cluj. It carries out works of improvement and makes comparative tests in relation to the region of Transylvania and Banat. It studies medicinal and forage plants (cultivation, treatment, conservation) and exercises a control over the trade in seeds of forage plants in Transylvania and Banat. It supervises and directs, from a technical point of view, the 2nd grade Stations of Campia, Turdei and Cenad.

Technical staff: one chief of Station, Professor N. SAVULESCU, one overseer and 5 assistants.

(2) *Station of Iasi.* — Also a 1st grade Station situated at 96 Allées Ghica Voda, Iasi.

Works of improvement and comparative tests are carried out for the region of Isai (Moldavia, Bessarabia, Bukovina), and also the work of seed control for the trade in forage plants for the same regions. It directs and supervises the 2nd grade Station of Tg. Frumos in technical matters.

Technical staff: one chief of Station, Professor St. POPESCU, 4 assistants.

B. — *Stations for Experimentation and Multiplication of Selected Seeds.*

These Stations undertake works of improvement and trials in methods of cultivation, also tests for the varieties best adapted for the various regions within the radius of the Station.

Seeds of selected varieties are produced, multiplied and supplied on request.

The installations of the Station for cleaning seeds and treating them for cryptogamic diseases are at the disposal of farmers.

The Station organises and directs the demonstration and trial fields within its radius.

The 2nd grade Stations are as follows:—

- (1) *Station of Baraganul*, Gara Secoleanu, Departments of Ialou.
- (2) *Station of Banat*, Cenad, Departments of Timis.
- (3) *Station of Campia Turdei*, Department of Turda.
- (4) *Station of Tg. Frumos*, Department of Iasi.

C. — *Stations for Specialised Work.*

(1) *Station of Agricultural Chemistry at Cluj.* — This 1st grade Station is situated at 3 Rue Manastur, Cluj.

The problems of chemistry applied to agriculture are studied. Analyses are made of soils, agricultural products, wines and preparations employed in agriculture. This Station assists in the application of the law against adulteration of wines.

Technical staff: one chief of Station, Professor MIRCEA IONESCU, one chief chemist, one overseer and 2 assistants.

(2) *Station of Viticulture and Oenology at Chisinau (Bessarabia).* — This is a 2nd grade Station. It possesses a vine-yard of 7½ hectares. Studies are made on cryptogamic diseases of the vine and the problems of wine-making. Selected ferments

are produced and supplied and information is given on the dangers of diseases of the vine.

(3) *Phytopathological Station of Chisinau (Bessarabia)*. — This is also a 2nd grade Station. Studies are made of the diseases and pests of the vine, cultivated plants and fruit trees with special reference to Bessarabia.

J. L.

CULTIVATION OF *COIX* SP. WITH A VIEW TO REPLACING WHEAT IN TROPICAL COUNTRIES. — Professor Enea RAZETO, Director of the National Centre of Agricultural Experimentation of Mastepe, Nicaragua, has sent us the following communication on the possibility of cultivating *Coix* sp. and particularly *Coix Lacryma*, with a view to replacing *Triticum sativum* in tropical countries.

For many years the experimental Centre of Masatepe has been engaged in popularising the cultivation of *Coix Lacryma*, "Indian wheat".

"Indian wheat", thanks to its strong root system, adapts itself to all kinds of soil. It may be cultivated at altitudes varying from sea level up to 1500 metres. The stools tiller profusely; as many as 30 stalks 3 metres in height may be obtained per stool. The grains have the dimensions of chick-peas. "Indian wheat", like maize, is cultivated in well prepared soil; it is sown in pockets, 1 m. distant in both directions, and 4 grains per pocket.

When the plants are 2 months old the soil is weeded and earthed up, after which there is no further need for weeding, the development of the plant being sufficient to prevent the growth of weeds.

The harvest is gathered at the end of 5 months when the grains are sufficiently firm. After cutting it is taken to the place where it is husked, which may be done by machinery. The grains contain one seed each, similar to that of wheat, but a little larger, which is easily separated from the grain by means of a machine for crushing, rice.

A white flour is obtained from the seed. The composition, compared to ordinary wheat flour, is as follows:—

	Protein	Fat	Carbo-hydrates	Cellulose	Ash	Water	Total
"Indian wheat".	12.49	5.40	69.90	0.80	1.50	10	100
Ordinary wheat. .	12.25	1.75	71.20	2.36	1.82	10.62	100

It will be seen from these figures that Indian wheat has a nutritive value superior to that of ordinary wheat, that it contains more fat, less cellulose (bran) and less carbo-hydrates (starch). For this reason it is somewhat difficult to obtain fermentation with the flour when kneaded with a certain quantity of yeast. This disadvantage is overcome by adding to the flour of Indian wheat, ordinary wheat flour or a flour containing more starch. The tests made at Masatepe with mixtures of Indian wheat flour and ordinary flour in equal quantities have given excellent results. The bread obtained has a good appearance and a better flavour than bread made with ordinary wheat flour alone.

J. L.

TRIALS IN *ALEURITES* GROWING IN MOROCCO IN 1934 AND 1935. — Thanks to the new report sent to the International Institute of Agriculture by the Agricultural Service of Morocco, we are able to give the following information on the trials in *Aleurites* growing now being made in that country. This will complete the information already given in the articles entitled “Cultivation of *Aleurites*, Wood-oil Trees”, published in this Bulletin 1935, No. 3, p. 129-160, and No. 4, p. 183-197.

I. — *Aleurites Fordii*.

(a) *Trials carried out by the Central Station for Agricultural Research, Rabat.* — At the beginning of 1934, nearly 2000 plants from seeds sown in March 1933, were distributed among 25 centres of experimentation situated in regions with different natural conditions stretching from Oudjda to Marrakech.

Further sowings were made with seeds from Gainesville and California. The first sprouted and grew well and the plants reached a uniform height of about 1.5 m. in November.

On the other hand, the seeds from California only gave 10 plants with mediocre growth, in November their height was only 0.35 m.

The 300 plants from seed sown in 1933 and which, on account of their feeble development in the spring of 1934 had been transplanted in a nursery instead of being distributed, had developed greatly during 1934 and had attained an average height of over 2.5 m. They were distributed in February, 1935.

An experimental plantation was established in the spring of 1934 on land attached to the Station with a view to studying the influence of budding, various methods of pruning and manure on the fructification of *Aleurites Fordii*.

(b) *Regional Trials.* — During a tour of inspection, a few fructifications producing normal fruits containing sound, healthy seeds were recorded at Rabat, Tifet, Bou-lhaut and Meknès. Flowering generally took place in March and April. The clusters of flowers usually contained only one female flower. In most localities the set-backs that had been previously observed had occurred again and for the same reasons:— too violent insolation, soil too humid or not sufficiently stable, rupture of the water equilibrium, as existing between roots and leaves, by intense evaporation due to great heat and want of watering. Certain falls in temperature during the winter had killed the shoots which had made an insufficient August growth causing buds to appear at the base of the lower branches.

A few plantations are vigorous, particularly those on acid argillo-siliceous soil with ferruginous nodules. The fall of leaves was late in all centres owing to the mild winter. Vegetation was arrested for only two months. In conclusion, it appears to be confirmed that certain zones with sufficient rainfall are suitable for *Aleurites Fordii*, but it would be premature to deduce positive results on the behaviour of this species in the climatic conditions of Morocco and, above all, on its productivity.

II. — *Aleurites montana*.

In 1934 new tests were made with seeds from Indo-China, none of which sprouted.

The 8 plants at the Experiment Station of Meknès developed fairly well, but did not flower. The lack of vigour and the chlorotic appearance seem to be due to the proportion of lime in the sub-soil of the plantation as well as to the effects of falls in temperature in winter and great summer heat.

The specimen kept at the Station at Rabat was more vigorous.

III. — *Aleurites moluccana*.

Various lots of seeds were imported from China, the United States and Hawaii with a view to studying this species as a stock for *A. Fordii*. The seeds from the Experiment Station of Honolulu were the only ones to sprout. In December, 1934, the plants were 60 cm. in height and showed vigorous growth. Vegetation began again towards the end of January, 1935.

The 3 plants kept in the collection of the Jardin d'Essais at Rabat had reached a height of 5.5 to 6.5 m. and were nearly 20 cm in diameter at the base of the trunk. Flowering was general and abundant in August and September, but only one plant fructified. The seed from this first harvest obtained in Morocco from healthy normal fruits will be sown in the spring of 1935.

About 35 to 40 % of the leaves fell. Vegetation was observed to commence in the last days of February, 1935.

Trials in budding were undertaken on plants from the seed of 1934.

Sowings with seeds from China and also seeds of *Aleurites triloba* were a failure owing to a new method that was tried and which resulted in all the seeds rotting.

IV. — *Aleurites cordata*.

Acclimatization of this species was studied following tests made in the Caucasus showing the adaptability of this species to climatic conditions in that region which resemble those of certain parts of Morocco.

Seeds were imported from the United States and from the Experiment Station of Soukhoum, U. S. S. R.

The latter, only, germinated and gave 22 plants which grew fairly well during the year 1934. In December their height varied between 20 and 50 cm. Leaves fell in January 1935.

G. L.

ADDITIONS AND CORRECTIONS TO THE MONOGRAPH ENTITLED "AGRICULTURAL EXPERIMENT INSTITUTIONS IN TROPICAL COUNTRIES". — In order that the Monograph entitled "International Directory of Agricultural Experimental Institutions in Hot Countries" should be kept continuously up-to-date, the International Institute of Agriculture has requested readers to send in additions and corrections to this Monograph. A certain number have already been received and are published below for the information of our readers before the publication of the new Directory.

The pages of the Directory are indicated on which the additions and corrections will be found.

I. — BRAZIL.

(See page 197 of the Directory).

7. — Estacao Experimental da Escola Superior de Agricultura
e Veterinaria de Minas Geraes.

7. — Experiment Station of Higher School of Agriculture
and Veterinary Science Minas Geraes.

(3) Directed by an Administrative Council composed of 9 farmers in the State of Minas Geraes and subsidised by the Government of this State.

(8) Objects: Instruction in agriculture and veterinary medicine.

2. — CEYLON.

(See page 309 of the Directory).

1. — Rubber Research Scheme (Ceylon).

1. — Service de Recsearches sur l'Hevea de Ceylon.

(1) The offices and general laboratory are situated on the Culloden plantation, Neboda. There are 2 experiment stations: one on the Dartonfield plantation at Agalawatta (178 acres) and the other at Nivitigalakele, Matugama (99 acres).

(2) The Rubber Research Scheme of Ceylon was established in 1913 and reorganised in 1921 and 1930.

(3) (4) It is financed by an export tax on raw rubber.

(5) Total area of the experiment stations: 277 acres.

(8) (9) Objects: investigations on the cultivation and diseases of rubber; multiplication of improved strains by budding and selection; treatment and utilisation of raw rubber.

(10) The results of the work carried are to be found in the publications of the Rubber Research Scheme.

(11) English.

3. — MALAYA.

(See Pages 333 and 334 in the Directory).

24. — Rubber Research Institute of Malaya.

24. — Institut de Recherches sur le Cautchouc de Malaise.

(1) Exact geographical position, climate, radius of action: Situated at Kuala Lumpur, Federated Malay States. Climate; tropical humid.

Radius of action: the British Colony of the Straits Settlements and Protectorat of the Federated Malay States of Perak, Selangor, Pahang, Negri Sembilan, Johore, Kedan, Kelantan, Treganu and Perlis.

(2) Founded in 1925.

(4) The Institute is financed by a tax on all raw rubber exported from Malaya.

(5) Area of land available and nature of the soil:

The Institute possesses 1333 acres of land at the Experiment Station of the Rubber Research Institute of Sungel Buloh, Selangor. Of these 1333 acres, 825 are rubber plantations.

The soil is sand-clay.

The Institute is also permitted by various companies of planters to carry out trials on their plantations situated in all parts of Malaya.

(6) Staff:

Director: B. J. EATON.

Secretary: H. S. BLACKLIN.

Botany Division: C. E. T. MANN, C. C. T. SHARP, H. GUNNERY, K. N. KAIMAL.

Chemistry Division: E. RHODES, J. D. HASTINGS, A. MOORE,

Pathology Division: F. BEELEY, R. P. N. NAPPER.

Soil Division: C. G. AKHURST, K. S. PILLAY.

Experiment Station: H. W. POSTON.

(8) Objects:

Researches and investigations of all descriptions on the cultivation of rubber, treatment and preparation of the latex and rubber for export; advice to rubber planters in Malaya. The Institute is not concerned with the legislative measures taken for the control of diseases of rubber plants. With a view to establishing contact between the manufacturers of rubber goods, the Institute participates with the Rubber Research Scheme of Ceylon in the upkeep of a chemical laboratory at the Imperial Institute, London. The work of the laboratory is directed by the "London Advisory Committee for rubber research (Ceylon and Malaya).

(9) For work in progress, see the annual reports and other publications.

(10) The results of work in progress are published in:

The *annual reports* from 1928 to 1933.

The *Journal of the Rubber Research Institute of Malaya*, Vols. 1, 2, 3, 4, 5.

Planting Manuals, Nos. 1 to 6.

These are all published in English.

For Asiatic planters who do not read English, a pamphlet is published in Malay, Chinese, and Tamil.

The Institute also directs a Service of Asiatic Instructors for the benefit of small native rubber planters. In 1934, this Service comprises 9 instructors stationed in various parts of Malaya who are under the administration of the agricultural officers of the Department of Agriculture. This Service is in process of development and in 1936 there will be 22 instructors.

4. — MOZAMBIQUE.

(See page 106 of the Directory).

1. — Estacao Experimental de Umbeluzi.

1. — Experiment Station of Umbeluzi.

(1) This Station is situated at Umbeluzi, at an altitude of 12 metres. It is served by a railway, the road between Lourenço-Marques and by the river Umbeluzi.

The climate is dry and very hot in the hot season and excessively cold for the latitude in the cold season.

The radius of action of the Station includes the whole colony.

(2) Founded in 1908.

(3) (4) Directed by the Agricultural Services.

(5) Total area, 100 hectares, of which 200 are retained for experimental cultivation and the rest is pasture.

The soil is argillo-siliceous.

(6) Staff: 8 Europeans and 80 natives.

Chief of Station: FRANCISCO DE CAMARA.

Overseer: ARMANDO SALBANY.

(8) (9) Objects: experiments with cotton, tobacco, millet, cassava, soya, various varieties of forage plants, potatoes, etc. The Station also possesses large nurseries of citrus and other fruits trees and ornamental plants, for sale and distribution to farmers.

(10) The Direction of Agricultural Services (Direccao dos Servicos de Agricultura) publishes a *Boletim* in which the results of work carried out are summarised.

(11) Portuguese.

2. — Posto Agricola de Mogovolas.

2. — Agricultural Post of Mogovolas.

(1) The Agricultural Post of Mogovolas is situated in the village of Nametil, circumscription of Mogovolas, district of Mozambique.

Climate: rainy season from November to April; dry season from May to October. The average maximum temperature (29° C) is reached in November; the average minimum temperature (21° C) in July.

The average annual rainfall is 977.8 mm.; the most rainy month is January with an average of 239.4 mm.; the driest month is September with a rainfall of 9.2 mm.

The radius of action of this Post includes the whole of the southern part of the district, comprising the civil circumscriptions of Mogovolas, Angoche, Moma and, Mogincual.

(2) Established on 1 October, 1929.

(3) (4) Directed by the district Bureau of the Agricultural Services (Reparticao Distrital dos Servicos de Agricultura).

(5). Total area: fields for experimentation, multiplication and research, 134 hectares; forests 53 hectares.

The land is clayey-sand, sandy-clay and sandy humus-bearing soil.

(6) Scientific staff: one agricultural expert of the district and one private farm manager.

Temporary staff: one chief of practical farming and two overseers, Europeans; 200 native workers, on an average.

(8) (9) Objects: genealogical selection of cotton, mass selection of sesame and various varieties of ground-nuts, cotton, rice, leguminous plants; gratuitous distribution of seeds to natives.

Trials in spacing in plantations, periods for sowing, soil cultivation.

Multiplication and propagation of valuable forest trees, native and exotic.

(10) Free distribution to native farmers of selected seeds, cassava cuttings, fruit trees such as oranges, lemons, guavas and bananas.

The Post publishes, from time to time, the results of work carried out also articles in the *Boletim* of the Direction of Agriculture.

(11) Portuguese.

3. — Posto Agricola de Ribaué.

3. — Agricultural Post of Ribaué.

(1) The Agricultural Post of Ribaué is situated 10 kilometres distant from the village of Ribaué, circumscription of Ribaué, district of Mozambique.

Climate: dry period from May to October; rainy period from November to April.

The radius of activity of the Post includes the whole of the western part of the district, comprising the civil circumscriptions of Ribaué, Malema, Imala and Nampula.

(2) Established by the " Diploma Legislativo da Colonia " No. 32, of 22 October, 1927.

(3) Financed by grants included in the general budget of the colony. Directed by the district Bureau of the Agricultural Services (Repartição Distrital dos Servicos de Agricultura).

(5) Total area: 128 hectares of fields for experimentation, multiplication of seeds and research work; 32 hectares of forest.

The land is sandy-clay, clayey-sand, sandy humus-bearing soil.

(6) Scientific staff: one district agricultural expert and one private farm manager.

Temporary staff: one chief of practical farming and two European overseers and an average of 200 native workers.

(8) (9) Objects: improvement of plants by the genealogical selection of cotton, the mass selection of sesame and various varieties of ground-nuts, cotton, rice, maize, sorghum, and leguminous plants. Seeds are distributed free of charge to native and European farmers.

Trials for periods for sowing, and spacing; acclimatization of varieties; cultivation of the soil.

Multiplication and propagation of valuable forest trees, native and exotic.

Experiments in acclimatization and yield of varieties of coffee, native and Arabian; studies on the most suitable shade plants.

(10) Free distribution to farmers of selected seeds etc.

The work carried out and the results obtained are published from time to time, also articles are published in the *Boletim* of the Direction of Agriculture.

(11) Portuguese.

J. LEGROS.

BOOK NOTICES (*)

HERCE P., *Fundamentos de acidimetria. Determinacion del pH*, 84 pags, 22 fig., bibliografía. Editorial Agricola Espanola, S. A., Caballero de Gracia, 24, 1º, Madrid.

The object of this pamphlet on Acidimetry and the determination of pH, by the Agronomy Engineer, D. Pedro HERCE, Professor at the special School for Agronomy Engineers in Spain, is to assemble in a few pages the information that may be found scattered among a great number of books, pamphlets, reports, etc., by extracting from them the most interesting matter and presenting it in a methodical manner and with the greatest possible clearness in order to facilitate the work of pupils in the Agricultural Schools or persons wishing to acquire general and fundamental knowledge of the many methods whereby pH may be determined at the present time.

This work is presented in a simple and concise form and is divided into 2 parts. The first contains general information on acidity, basic state, neutrality, notations, etc. The second is devoted to a study of the following questions:— I. The basis of the electric or potentio-metric method (NERNST formula for the concentration piles; determination of pH by means of this formula; electrodes, measurement of electro-motive force) — II. TRENEL'S Acidimeter — III. Bases of the colorimetric method (indicators, acidimeters measuring by the colorimetric method) — IV, Criticisms of the electric and colorimetric methods (advantages and disadvantages of the two methods for determining pH) — An appendix which contains a short description of the theory of potentials of oxy-reduction.

Persons interested in the vast problem of the determination and application of pH will find valuable information in this work from which they will be able to obtain an exact idea of the present state of this question.

A. P.

(*) Under this heading are included short synopses of books received for review.

GERDTZEN B. F. (Ingeniero Agronomo), *El agua en la agricultura*, 80 pags. Santiago du Chili, Imprenta Chile, Morande 767.

This work on Water in agriculture, which is the first to be published in Chili on this subject, refers to the irrigable lands of Chili, but the author also describes in detail the tests made in North America for determining the quantity of water necessary for various crops and compares them with his own personal experiences.

All the elements which enter into irrigated agricultural production are minutely analysed, not only the water itself and in relation with other elements of physical agriculture, but also the manner of utilisation, or system of irrigation.

The author devotes a few chapters to the study of rains and seasonable distribution of rainfall in certain defined regions in Chili; he then discusses the practical information obtained by experience in the irrigable zones of Chili and gives the various methods of utilising water according to the type of land and crops.

Considerable space is given to the study of erosion due to rainfall and the means of lessening or avoiding the effects, also the method of measuring the flow of water in streams by means of rustic wooden measures, easily and cheaply made.

The following chapters are included in the book:— Introduction — Air, water heat, soil and plants — Uses and abuses of irrigation water — Systems of irrigation and their object with some practical indications. Capacity of the soil for water — Factors influencing the evaporation of water in the soil — Clouds and their formation and rainfall in Chili — Value of the quantity of water used by a feeder of the Maipo canal — Observations on practical irrigation — Establishment of irrigation dues — Damage caused by erosion and means of diminishing damage — Systems of gawging, simple and easily applied — Water supply and cost price.

The author has invented a formula and a simple process easily applied for determining the volume of water per hectare necessary for irrigating cultivated soils of normal composition and most nearly approaching the optimum requirement for irrigated crops.

A. P.

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COMMISSION INTERNATIONALE D'AGRICULTURE. Paris. Annales. Mai 1935. XIII. [Chaumont, Imp. de l'Est], 1935. 185 p.

IRISH AGRICULTURAL ORGANISATION SOCIETY, Ltd. Report for the year ending 31st March, 1934. Dublin, I. A. W. S. Printing department, 1934. 57 p.

HANDBUCH FÜR DAS GESAMTE DEUTSCHE SCHRIFTTUM DER LANDWIRTSCHAFT, FORSTWIRTSCHAFT, DES GARTEN- UND WEINBAUES, DES KLEINGARTEN- UND SIEDLUNGSWESENS UND DER TIERHEILKUNDE MIT EINSCHLUSS DER GRENZGEBIETE. Jg. 1933. Bearbeitet von ANTON ARLAND. Leipzig, M. Jänecke, 1934. 114 p.

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- WARDLAW, C. W. Diseases of the banana and of the Manila hemp plant. London, MacMillan, 1935. XII, 615 p.

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Tropical and Subtropical Crops.

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- DIDIER, R. [et] P. RODE. Les mammifères de France. Paris, Société nationale d'acclimatation de France, 1935. 398 p. (Archives d'histoire naturelle publiées par la Société nationale d'acclimatation de France).
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(1) Previous list March 1935. To be continued September 1935.

(2) List of abbreviations: biheb. (biweekly); bimens. (twice monthly); bimestr. (every two months); déc. (every ten days); étr. (foreign price); f. (copy); heb. (weekly); int. (home price); irr. (irregular); mens. (monthly); n° (number); N. S. (new series); p. a. (per annum); q. (daily); sem. (half yearly); s. (series); triheb. (every three weeks); v. (volume); trim. (quarterly).

(3) Between brackets [/] are given translations and explanatory notes not appearing in the title of the review.

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PLANT PROTECTION

INTERNATIONAL BULLETIN OF PLANT PROTECTION

DISCOVERIES AND CURRENT EVENTS *

Argentine Republic: The Overwintering Stages of Pear and Apple Scab (1).

In 1934 the existence has been determined, for the first time in the Argentine Republic, of the perithecia of *Venturia pirina* Aderk. and *V. inaequalis* (Cke.) Winter, agents of the diseases commonly called 'sarnas' (scab) of pears and apples, and which have, for a long time, been firmly established in the humid parts of this country, chiefly in the islands of the Delta of the Paraná and various localities in the north west and south of the province of Buenos Aires.

In 1930 pear and apple scab made its presence evident by the damage it caused to the leaves, twigs and especially the fruits much of which became valueless, but it is chiefly in the last few years, with the increase in cultivation of pomaceous fruits, that these diseases have reached dangerous proportions.

In 1931 the Phytopathological Division of the Ministry of Agriculture was able to establish an intense attack of scab on the pear blossom in the first section of the islands of the Delta of the Paraná and which caused the loss of the greater part of the harvest of 'William' pears, which variety is most cultivated in that region.

It was thus discovered that the epidemic was favoured by the atmospheric conditions which preceded the appearance of the disease (a relative humidity was determined of 95 to 100 between 25 September and 3 October). On account of these exceptional conditions of humidity apple scab also appeared in abundance in the varieties 'Reinette' and 'Delicious'. In 1933 pear and apple scab again appeared in epidemic form in various parts of the province of Buenos Aires (San Pedro, Castelli, Cobos, etc.). The first attack took place during the time of blossoming and setting of the fruit (October-November) and the second during the last stage of development (February-March). In both periods the relative humidity was very high and consequently very propitious for the development of the disease.

The propagation of pear and apple scab takes place during the period of vegetation of the trees (September-March) by means of the spring spores (conidia) which was the only form of reproduction then known in the country the overwintering stage (perithecia) of the fungus not having been discovered. It was

* Under this and the third heading the countries are arranged in French alphabetical order.

(1) Communication from the official correspondent of the Institute, Mr. JUAN B. MARCHIONATTO, Agronomical Engineer, Chief of the 'Defensa Agrícola y Sanidad Vegetal', Ministry of Agriculture, Buenos Aires.

supposed, as in other countries where these diseases exist, that the parasites overwintered within the parts attacked (twigs, leaves, fruits) and that the conidia and stromas were the sources of origin of the first infections which were observed on the trees in the spring.

The work of the Phytopathological Division has made it evident that on the fallen leaves attacked by scab after some months (observation July-August) the spring spores (conidia) were rare; on the other hand, on the same leaves the production of perithecia was very abundant. These perithecia are imbedded in the leaf and only a small neck appears on the surface from which the ascospores emerge when they are mature.

V. pirina was especially abundant on the under surface of the leaves of the pear while *V. inaequalis* was faintly discernable on both sides of the leaves of the apple.

The material which was studied came from Castelli (F. C. S.) and Villa Ortúzar (Federal Capital).

Australia: Notes on Plant Diseases Recorded in New South Wales for the Year Ending 30th June, 1934 (1).

CEREALS AND FIELD CROPS.

Wheat: Take-all (*Ophiobolus graminis*) and Foot-Rot (*Helminthosporium sativum*) were the most prevalent diseases, and damage up to 50 % was recorded in some crops. Root-Rot (*Fusarium culmorum*) was present to a minor extent. Purple Patch (*Rhizoctonia solani*) was observed in one district causing losses up to 35 %. Although prevalent in the north west, Stem rust (*Puccinia graminis*) did not seriously affect the main crops. Natural infections (aecidia) were observed for the first time in Australia, on the barberry (*Berberis vulgaris*). Losses from Flag Smut (*Urocystis tritici*) were not as severe as in the past owing to cultivation of resistant varieties.

Maize: Root and Stalk Rot was caused mainly by *Gibberella saubinetii*, perithecia were abundant on old stalks. Although the organism was found as a cob and grain rot, *Fusarium moniliforme* was more important in this connection.

F. moniliforme and *F. moniliforme* var. *subglutinans* were important causes of seedling blight. *Gibberella fujikuroi* var. *subglutinans* was recorded as a parasite of maize for the first time.

Millet: Kernel Smut (*Sphacelotheca sorghi*) caused up to 50 % infection in some crops, and root and stalk rots (*Colletotrichum* sp.) were also serious.

Sugar Cane: Less than 1 % of crop was lost by diseases, the most important of which were Gumming (*Bacterium vascularum*) and the viroses, Fiji Disease and Mosaic.

(1) Communication from the official correspondent of the Institute, Dr. R. J. NOBLE, Biologist, Department of Agriculture, Sydney, New South Wales, Australia.

Lucerne: Stem Nematode (*Anguillulina dipsaci*) affected some crops severely. Witches' Broom (undet.) was also of importance. A wilted and stunted condition apparently associated with unfavourable soil conditions was widespread throughout the State.

Tobacco: Downy Mildew (*Peronospora tabacina*) caused serious loss in seed beds.

FRUIT CROPS.

Apples and Pears: Weather conditions favoured development of Black Spot (*Venturia inaequalis* and *pirina*) where control measures were inadequate or not applied. Other diseases included Bitter Pit, Internal Cork, Water Core, Heart Rot (*Schizophyllum commune*), Brown Rot (*Sclerotinia fructicola*), Pear Fleck (*Entomosporium maculatum*) and Measles.

Citrus: Black Spot (*Phoma citricarpa*) was very severe in coastal areas, Melanose (*Phomopsis citri*) was more widespread than usual. Scab (*Sporotrichum citri*) caused loss in lemons and grape fruit. Leaf Yellowing (possibly magnesium deficiency) was prevalent in portions of the coastal areas.

Stone Fruits: Brown Rot (*Sclerotinia fructicola*) was most destructive and Freckle (*Cladosporium carpophilum*) also assumed serious proportions. Green Rot of Apricots (*Sclerotinia libertiana*) was noted for the first time. Rust (*Puccinia pruni-spinosae*) damaged some canning varieties of peaches in inland irrigation areas. An internal breakdown of apricots which caused almost total disintegration of the fruit tissues was associated with excessively moist soil conditions under irrigation. Root Nematode (*Heterodera marioni*) was very prevalent on peaches in some sandy soils of coastal areas. Internal Brownig (undet.) was recorded on some varieties of canning peach.

Grapes: Downy Mildew (*Plasmopara viticola*) and Black Spot (*Gloeosporium ampelophagum*) developed seriously in most crops.

Miscellaneous Fruits: Diseases affecting Cavendish bananas were of importance only in certain areas and included Anthracnose (*Gloeosporium musarum*) in cooler areas, Dry Rot (*Clitocybe* sp.) in newly cleared lands, Leaf Spot (*Cercospora* sp.) and Bunchy Top (virus). Some serious individual losses were caused by Squirter (*Nigrospora* sp.)

Strawberries were severely affected with Wilt (*Rhizoctonia* sp.).

VEGETABLE CROPS.

Beans: Bacterial Blight (*Bacterium medicaginis* var. *phaseolicola*) was again the most serious disease. Mosaic developed extensively after widespread aphid infestation. Lack of pollination was associated with exceptionally cool weather in some districts.

Cabbages and Cauliflowers: Leaf Spot (*Alternaria brassicae*) was of importance and wet weather favoured development of Black Rot (*Bacterium campestris*) and Leaf Spot (*Bacterium maculicolum*).

Potatoes: Many crops failed as result of epidemic of Late Blight (*Phytophthora infestans*). Virus diseases included Leaf Roll, Mosaic and Aucuba Mosaic. Rhizoctonia disease and Common Scab (*Actinomyces scabies*) were also prevalent.

Tomatoes: Late Blight (*Phytophthora infestans*) was the most important disease of field crops. Leaf Mould (*Cladosporium fulvum*) reached epidemic form for the first time. Bacterial Canker (*Aplanobacter michiganense*) although apparently present for several years past was recorded for the first time as causing serious damage. Big Bud (virus) although not yet serious appears to have become more widespread. Spotted Wilt (virus) again seriously affected spring crops. Streak (virus) was recorded for the first time and seriously affected glasshouse crops.

Miscellaneous Vegetables: Blossom Rot of Cucurbits (*Choanephora cucurbitarum*) was recorded for the first time. Downy Mildew (*Peronospora destructor*) again seriously damaged onion crops. Peas were severely affected by Blight (*Bacterium pisi*). Rosette (undet.) was widespread on sweet potato crops and caused some heavy losses.

MISCELLANEOUS PLANTS.

The following diseases were recorded for the first time. Leaf Smut (*Urocystis agropyri*) on *Bromus mollis*, Leaf Stripe (*Ustilago striaeformis*) on *Poa annua*, Powdery Mildew (*Ovulariopsis* sp.) on Mock Orange (*Philadelphus* sp.), Leaf Spot (*Bacterium aptatum*) on Nasturtium (*Tropaeolum* sp.). Brown plaster mould (*Myriococcum praecox*) was recorded for the first time in mushroom beds.

Twig and Leaf Blight (*Marsonia salicicola*) affected Willows (*Salix* sp.) more seriously than in the previous season.

Eritrea: The Tropical Migratory Locust (1).

During the month of October, 1934 the hatching of a few larvae of *Locusta migratoria migratorioides* was reported in the territory of Usoquà and Decdec Nabò, Cohain, Seraè. The larvae were immediately destroyed by the local natives.

(1) Communication from the official correspondent of the Institute, Dr. ROLANDO GUIDOTTI, Chief of the Agricultural Bureau of Eritrea, transmitted by the Government of the Colony.

Estonia: The Destruction of Barberry and Buckthorn (1).

In Estonia the cereals are often attacked by rusts. It is especially in the North-West of the country that the cereals suffer from this disease which sometimes causes severe damage to the cultivation. In southern Estonia, the damage which the cereals suffer is notably less important. The reason for this is, that in the South the barberry (*Berberis vulgaris* L. and var. *atropurpurea* Hort.) is found solely in parks and gardens and rarely in the wild state, whereas in the North-West, it commonly grows in the wild state on Silurian soil. The buckthorn (*Rhamnus cathartica* L.) is to be found throughout the country, but to a much less extent than the barberry.

In order to control the rusts of cereals (*Puccinia graminis* Pers. and *P. coronifera* Kleb.) Parliament passed a special law at the Assembly of the 18th November, 1932, which renders compulsory the destruction of barberry and buckthorn.

Within a period of three years every bush of barberry and buckthorn must be destroyed by the owners of the land or by the usufructuaries, in the case of lands belonging to the State. During the first year the destruction must be directed against all bushes in gardens, in fields, within a radius of 200 yards round the fields, and in meadows. During the following two years these bushes everywhere else must be destroyed.

The Ministry of Agriculture is authorised to protract the date fixed by the law, if in special cases it appears indispensable. The Ministry may also allow the work of destruction to be suspended in districts where the barberry and the buckthorn offer no danger to agriculture.

The owners and usufructuaries of land are obliged to see that the destroyed bushes do not grow up again.

The cultivation of the above mentioned plants in a district where their destruction is compulsory is allowed only for a scientific purpose, and at the authorisation of the Minister of Agriculture.

Every usufructuary of land is authorised to request that the law in question be put into force, and to apply in this matter to the authority of the police for them to take the necessary steps.

In the case of owners and usufructuaries who do not effect the destruction according to the law, the necessary work will be undertaken by the local authorities at the expense of those interested.

A special instruction with regard to the enforcement of the law will be published by the Minister of Agriculture in agreement with the Minister for Home Affairs.

(1) Communication from the official correspondent of the Institute, Mr. J. ÜMARIE, Director of the Bureau for Agricultural Education and Experimentation, Ministry of Agriculture, Tallinn, Estonia.

United States of America: The More Important Entomological Records for September, 1934 (1).

Wireworm (*Elateridae*) damage, particularly to potatoes, was reported from Wisconsin, North Dakota, Missouri, and South Carolina.

In general the hessian fly (*Phytophaga destructor* Say) is at a low ebb in the main winter-wheat regions.

Chinch bugs (*Blissus leucopterus* Say) were moving into winter quarters in large numbers throughout the eastern part of their range. An unusual condition is reported in the finding of large populations of these insects in Vermont during the latter part of August.

The corn ear worm (*Heliothis obsoleta* Fab.) was reported as occurring generally from the Gulf region to Minnesota and from the Atlantic to Utah. In Missouri it is said to be more prevalent than at any time during the past 30 years. In Colorado corn-ear infestation was said to be as high as 100 percent. Throughout the greater part of the country the ear worm was doing serious damage.

The fall armyworm (*Laphygma frugiperda* S. & A.) was destructively abundant in the Gulf region from Georgia to Texas.

The codling moth (*Carpocapsa pomonella* L.) was unusually abundant and destructive in the Ohio River Valley and in the Pacific Northwest.

The Mexican bean beetle (*Epilachna corrupta* Muls.) was reported for the first time from Orange and Windsor Counties, Vermont, and from Webster County, Mississippi. Damage has been general and serious throughout its previous range.

The pea moth (*Laspeyresia nigricana* Steph.) has been discovered in the State of Washington, where it occasioned considerable loss in two counties to growers who were raising peas for canning.

The pickle worm (*Diaphania nitidalis* Stoll) again appeared in Connecticut this year. This is its second appearance in the past 34 years.

Heavy damage to sugar beets by the greenhouse leaf tier (*Phlyctaenia rubigalis* Guen.) was reported from Orange County, Calif. The sugar content of the beets in infested fields is so low as to render them hardly worth harvesting.

The satin moth (*Stilpnotia salicis* L.) was reported as occurring in Oregon, in the Willamette Valley. This is the first record of the occurrence of this insect in that State.

One of the elm leaf aphids, *Tuberculatus ulmifolii* Monell, was present in outbreak numbers in Iowa and Nebraska.

Very heavy infestations of crickets (*Gryllus domesticus* L.) in houses located in the vicinity of public dumps were reported from Maine, Massachusetts, and Wisconsin. In the Massachusetts infestation the insects were so numerous as to force the tenants to leave the houses.

(1) Communication from Mr. LEE A. STRONG, Chief of the Bureau of Entomology and Plant Quarantine, United States Department of Agriculture, Washington, D. C., to the International Institute of Agriculture.

Mozambique: Locust Movements (*Nomadacris septemfasciata* and *Locusta migratoria migratorioides*) (1).

Monthly Report (September, 1934).

During the month of September a considerable diminution has been observed in the movements of locusts in the North of the Colony. In the central region a certain movement has already been reported, principally in the district of Quelimane, on the borders of Nyasaland, where large swarms have been seen flying towards the S. One of the largest swarms came from the above-mentioned English Colony.

In the territory of Manica and Sofala large swarms have been observed, generally coming from the N. W.

In the South of the Colony, in the region of Inhambane two swarms have been seen. In the district of Lourenço Marques increasing movements of locusts have been reported.

In the first days of September two swarms crossed the southern frontier coming from Zululand, also another swarm coming from Swaziland. These swarms passed over Maputo, flying towards the confines of Umbeluzi, Tembe, etc. Swarms continued to appear in the valleys of the rivers Incomati, especially in the Mahiça region.

Properties situated in these valleys have been damaged.

Southern Rhodesia: Locust Invasion, 1932-1934 (2).

Monthly Report No. 22. September, 1934.

Swarms of the Red Locust (*Nomadacris septemfasciata*, Serv.) have been in evidence throughout the month, particularly in the eastern and north-eastern districts of the Colony. A feature of the reports received has been the great size and density of some of the swarms observed.

One swarm in the Mazoe district is described as easily the biggest that has ever been seen in the district. It commenced passing over one point in the early morning of the 23rd and at 1 p. m. on the 25th was still passing over.

The direction of flight has been irregular, and no definite migratory tendency has been evidenced, in spite of the fact that a definite invasion via Northern Rhodesia took place in August.

As in previous experience, swarms have continued to haunt the humid eastern border districts crossing the border freely to and from Portuguese East Africa. The presence of swarms has, however, been reported as far west as the Wankie

(1) Communication from Mr. JULIO CARDÉ ALFARO CARDOSO, Chief of the Entomological Section, Lourenço Marques, transmitted to the Institute by the Director of the Agricultural Services of the Colony.

(2) Communication from the official correspondent of the Institute, Mr. RUPERT W. JACK, F. E. S., Chief Entomologist, Department of Agriculture, Salisbury, Southern Rhodesia.

district, and as far south as Chibi and Insiza districts, all of which are in distinctly or comparatively dry areas. Salisbury township has suffered several visitations during the month.

To the end of the month there was no sign of development of the ovaries in the females.

Enemies and Disease:

Nothing has been recorded under this heading. All specimens examined during the month have been healthy and free from both parasites and disease.

Damage:

Damage to native trees, plantations of exotic trees, fruit trees, early grazing and irrigated crops has been reported from various districts.

Outlook:

The prospect for the coming season in regard to prevalence of hoppers based on prevalence of winged locusts in the colony and reports from neighbouring territories, has become decidedly grave, and it appears highly doubtful if the peak of the present swarm cycle of the Red Locust has as yet been passed, even in Southern Rhodesia.

VARIOUS QUESTIONS

Resolutions of the Third International Locust Conference*.

II. — THE SPECIAL PROBLEMS OF EACH SPECIES OF LOCUST AND THE STEPS TO BE TAKEN FOR THEIR FURTHER INVESTIGATION.

- (a) The Tropical Migratory Locust, *Locusta migratoria migratorioides* (Reiche and Fairmaire).

The problem of the outbreak centres of the Tropical Migratory Locust in the French Soudan has reached the stage of systematic research in the field, at specified points and by local observers.

The Conference, considering that the work of field investigators whose principal function is to determine the outbreak centres should after their departure be carried on by staffs of observers whose duty it should be to apply and develop the methods laid down by the field investigators and to enlarge at a later stage the existing nucleus of organisations responsible for preventing the formation of migratory swarms, hopes that the co-operating Governments will select from their agricultural staffs observers for service in each region in which it seems necessary who shall act under the instructions of the principal field officers.

(Note. — These are enumerated in Resolution III (a) (i) below).

* Concluded from this *Bulletin*, 1934, No. 12, p. 275.

(b) The Desert Locust, *Schistocerca gregaria* (Forskål).

The problem of the Desert Locust is further from solution than that of other locust species. This is due to the fact that there is still very little known regarding its outbreak areas, owing to the wide extent and difficult nature of the countries in which they are suspected to be located.

It is, therefore, urgently necessary that the Governments concerned should arrange for at least preliminary surveys to be undertaken of the regions suspected of being outbreak areas.

(Note. — These are enumerated in Resolution III (a) (ii) below).

(c) The Red Locust, *Nomadacris septemfasciata* (Serville).

(1) To assist in the delimitation of the outbreak areas and outbreak centres of the Red Locust, it is desirable that all African territories south of the Sahara, whether known to be liable to invasion by this species or not, should prepare vegetation maps to show the distribution and nature of open and very thinly bushed grasslands. Copies of these should be sent to the international centre for anti-locust research (the Imperial Institute of Entomology, London), either direct or through their own national anti-locust organisations or through the Southern African Locust Bureau. Such maps will be greatly increased in value if photographs and notes on the vegetation can be added.

(2) In all countries general observations should be made on the changes in distribution of isolated locusts during the later stage of the swarm outbreak.

(3) In addition to the laboratory work already carried out in various places to solve the problems set by field work on the Red Locust, at least one extra whole-time laboratory worker with adequate facilities is needed. This worker should keep in the closest possible touch with the field workers and should work on the problems which they find most urgent but are unable to investigate themselves; he should therefore work in the southern half of Africa. Rhodesia, the Union of South Africa and Mozambique appear to be the most suitable countries for such studies.

(4) Entomological reconnaissance is still needed in certain areas.

(Note. — These are enumerated in Resolution III (a) (iii) below).

(d) The Moroccan Locust, *Doclostaurus maroccanus* (Thunberg).

In view of the very promising results obtained in several Mediterranean countries in biological studies on the Moroccan Locust, it is highly desirable that such studies should be continued by the Governments concerned and initiated by the Governments of other countries suffering from the ravages of this locust.

III. — ARRANGEMENTS FOR FURTHER INTERNATIONAL CO-OPERATION IN ANTI-LOCUST RESEARCH.

- (a) Allocation for each species of locust of the areas to be investigated.

(i) The Tropical Migratory Locust, *Locusta migratoria migratorioides* (Reiche and Fairmaire).

The regions of the Middle Niger (zone of inundation and South Sahelian zone) are of international interest. They should be regarded as the principal objective for research on the outbreak centres of the Tropical Migratory Locust. The biological study of this species already begun by the French authorities, should be pursued in the Middle Niger preferably for the moment, as this is at present believed to be the only outbreak area of this species.

(ii) The Desert Locust, *Schistocerca gregaria* (Forskål).

The main areas where further investigations are required are shown in the following list [see p. 11] in which are indicated also those areas already investigated:—

(iii) The Red Locust, *Nomadacris septemfasciata* (Serville).

(1) A primary reconnaissance would be of value in the Belgian Congo, where the Lualaba Valley should be regarded as a probable outbreak centre.

(2) It is desirable that:—

(a) work on the grasslands of Mozambique should be undertaken by the Portuguese and Union of South Africa Governments;

(b) the Government of Nyasaland should initiate work on Lake Shirwa and Zomba Mountain and this work should be correlated with the work in progress in the Lower Shire in Portuguese East Africa;

(c) the Government of Northern Rhodesia should arrange to watch the Kafue Flats at Mazabuka;

(d) the Government of the Union of South Africa should arrange for the study of the Red Locust in the eastern grasslands of the Union.

(3) A primary reconnaissance in Oubangi-Shari, in the southern parts of the Anglo-Egyptian Sudan and in Uganda before these areas are overrun by swarms would assist in the discovery of the essential features of outbreak centres.

(4) It is desirable that investigations of the swarming phase (phase *gregaria*) should be undertaken by the Portuguese Government in the Mossamedes and Huila districts of Southern Angola and in the Kwango district of Northern Angola.

(5) The authorities in the Belgian Congo should investigate the Belgian sector of the Kwango region.

(6) It is desirable that the grasslands of the Mweru-Tanganyika lowlands of Northern Rhodesia should be mapped.

(7) The southern shores of Lake Chad must be regarded as a potential outbreak centre of the Red Locust. At the moment, there is hardly any evidence

Regions and area.	Type or investigation required.	Countries by which work should be undertaken.
A. — <i>Moroccan-Senegambian region</i> —		
i. Mauritania	Reconnaissance.	France.
ii. Rio de Oro	Reconnaissance.	Spain.
iii. Draa Valley	Reconnaissance.	France.
B. — <i>Algerian-Nigerian region</i> —		
i. Nema area	(Already investigated).	
ii. Adrar des Iforas	(Already investigated).	
iii. Area north and north-east of lake Chad	Reconnaissance.	France.
iv. Southern part of the Niger Colony ("Tegama")	Reconnaissance.	France.
C. — <i>Sudanese-Arabian region</i> —		
i. Kordofan	(Already investigated).	
ii. Darfur	Reconnaissance in progress.	Great Britain.
iii. African coast of the Red Sea:		
(a) Sudan Coast	Stationary work.	Great Britain.
(b) Coast of Eritrea	Reconnaissance.	Italy.
(c) Abyssinia	Reconnaissance.	Abyssinia.
iv. Arabia:		
(a) Coastal plains of Yemen	Reconnaissance.	Yemen.
(b) Nefud	Reconnaissance.	Saudi Arabia.
(c) Batina plain	Reconnaissance.	Oman.
(d) Lahej	Reconnaissance.	Great Britain.
D. — <i>Somali region</i> —		
Italian Somaliland	Reconnaissance.	Italy.
E. — <i>Indian region</i>	Stationary and reconnaissance work in progress.	India.
F. — <i>South West African region</i>	Detailed survey.	Union of South Africa.

available regarding the distribution of this locust in those parts of the shore lying in French territory to the east of Nigeria. It is desirable that this area should be examined. It is recommended that the British and French authorities should collaborate in this matter.

(iv) Other species of locust.

In view of the fact that the biological study of local species of migratory locusts of secondary importance may provide valuable information and serve to enlarge the means of control available against the principal migratory species, the Conference hopes that side by side with the programme of research already drawn up at this Conference, investigations should be carried out in regard to the secondary species such as *Tylotropidius* sp., *Acrotylus* sp., etc.

(b) Improvements on the present system of reporting on locusts.

(1) It is a matter of great satisfaction to the Conference that the recommendations made by the First and Second International Locust Conferences, held respectively in Rome and Paris [see this *Bulletin*, 1932, No. 1, pp. 6-10; 1933, No. 1, pp. 5-9], in regard to the preparation in every territory of reports on locust activities have met with the ready support of the majority of the authorities concerned.

It is particularly important that these efforts should not be relaxed when there is a reduction in the intensity of locust invasions, since exact data on the last stages of the invasions would throw important light on their origin.

(2) It is, however, to be regretted that in some of the territories subject to locust invasions there are still no organisations for the regular collection of information on locusts. While the Conference realise the administrative difficulties often involved, they hope that effective steps will be taken by the Governments concerned to establish such organisations wherever possible.

(3) International locust investigations would, the Conference further point out, be greatly assisted if there were greater uniformity in the preparation of the locust reports and if these were forwarded to the international centre (Imperial Institute of Entomology, London), with greater regularity. To this end, the action recommended by the Second International Locust Conference should be supplemented as follows:—

(a) Reports should be prepared for monthly (or shorter) periods and copies sent direct to the international centre as soon as practicable.

(b) All reports should be accompanied by sketch maps marked with the conventional signs approved by previous conferences as modified below.

CONVENTIONAL SIGNS FOR THE RECORDING ON MAPS OF DATA REGARDING THE MIGRATIONS, EGG-LAYING, AND EMERGENCE OF LOCUSTS.

- ▲ a swarm flying in a known direction.
- ┐ a flying swarm, direction not known.
- a settled swarm.
- └ a settled swarm departing in a known direction.
- ⬆ a settled swarm which came from a known direction.
- ⊙ a circling swarm.
- △ an ovipositing swarm.
- egg deposits.
- hoppers.
- S adults in the solitary phase.

(The date should be written beside the sign).

Records of adult locusts (but not hoppers) should be made with the following colours:—

Red — young swarms.

Blue — swarms ready to oviposit or ovipositing.

Black — swarms of intermediate maturity or of which the maturity is unknown.

(c) Great care should be taken to differentiate between the various species of locust observed. Separate reports and maps should be prepared for each species. Undertermined species should be reported on separately.

(d) Monthly reports should include a brief summary of the situation during the month. Special attention should be paid to the first and last dates of the appearance of (i) eggs, (ii) hoppers, and (iii) adults. When swarms of two successive generations are observed, the data in regard to them should be discriminated in the reports and maps. Distinct colours should be used to indicate different generations.

(e) Where only reports for periods longer than one month (three monthly, annual) are prepared by local administrations, it is particularly important that copies should be forwarded direct to the international centre at the earliest possible date and where possible by air-mail.

(f) In periods of locust invasion it is desirable that warning notices of local breeding and of probable swarm movements should be communicated by administrative authorities to the corresponding authorities of adjoining territories.

(c) The exchange of reports between field investigators.

(1) In the interests of a closer co-operation in anti-locust research it should be desirable that the Governments of locust-infested countries should arrange for the communication as expeditiously as possible by the responsible departments of reports relating to the locust problem to the international centre for anti-locust research (Imperial Institute of Entomology, London).

(2) It is desirable that Governments should instruct their officers receiving such reports to treat them as strictly confidential until their publication by the respective authors.

(3) It is further desirable that Governments should authorise the communication of such reports to government entomologists engaged in anti-locust work in neighbouring territories, either direct or through the international centre.

(d) Definition of the terms relating to the distribution and migration of locusts.

In view of the great diversity which at present exists in the use of the terms relating to the distribution and migration of locusts, it is desirable that the following terms should be used in all reports in the sense indicated below:—

(1) *Distribution area of species.*

All the territories where the solitary phase (phase *solitaria*) of a species lives permanently.

(2) *Invasion area of a species.*

All the territories which can be invaded by a species in its swarming phase (phase *gregaria*).

(a) *The area of normal migration.*

All the territories normally visited by a species in its swarming phase (phase *gregaria*), and in which it can breed.

(b) *The area of occasional migration.*

All the territories to which a species in its swarming phase (phase *gregaria*) migrates only occasionally, but in which it can breed.

(c) *The area of exceptional invasions.*

All the territories which can be invaded in exceptional cases by a species in its swarming phase (phase *gregaria*), but in which it does not breed.

(3) *Outbreak area.*

All the centres of outbreaks.

(4) *Outbreak centre.*

A station the ecological conditions of which sometimes provoke the transformation of a species into its swarming phase (phase *gregaria*).

(e) *Standardisation of biometric methods.*

In view of the diversity which at present exists in the methods of measuring locusts and in the expression of these measurements it is desirable that all workers in this field should adopt uniform methods.

(1) *Methods of measuring.*

It is desirable that all workers should follow the methods of Zolotarevsky given in his "Contribution à l'étude biologique du criquet migrateur, *Locusta migratoria capito* (Saussure) dans ses foyers permanents" (*Annales des Epiphyties*, Paris, 1933, 19^e année, nos 1 et 2), employing the following symbols:—

E length of elytron.

F length of femur.

P length of pronotum.

M width of constriction of pronotum (width of middle).

H height of pronotum.

C maximum width of head.

(2) *Methods of expressing ratios.*

It is desirable that the various ratios should always be expressed in the same way and that the following should be adopted:—

E/F ratio of elytron to femur.

P/C ratio of pronotum to maximum width of head.

H/C ratio of height of pronotum to maximum width of head.

M/C ratio of width of constriction of pronotum to maximum width of head.

(3) *Methods of calculating averages.*

The true average ratio is obtained by calculating the ratio of the totals of the actual measurements and not the average of the individual ratios.

LEGISLATIVE AND ADMINISTRATIVE MEASURES

Germany (Anhalt). — By Police Ordinance, dated 6 October, 1934, measures have been adopted for the control of public establishments of seed disinfection. These measures correspond exactly to those adopted in the province of Saxony [see this *Bulletin*, 1934, No. 11, p. 248]. (*Ämtliche Pflanzenschutzbestimmungen*, Berlin, 1. November 1934, Bd. VI, Nr. 7, S. 124).

Germany (Lippe). — By Police Ordinance of 22 September, 1934 the control of hamsters and voles is made compulsory. The official agricultural organisation is authorised to buy what is necessary for the control in common in a given district and to divide the expenses among the communes interested which, in their turn, will be re-imbursed by the land owners. (*Ämtliche Pflanzenschutzbestimmungen*, Berlin, 1. November 1934, Bd. VI, Nr. 7, S. 125-126).

Argentine Republic. — On account of the great amount of damage caused by the ivy red spider (*Bryobia praetiosa* Koch), chiefly in the orchards in the valley of Río Negro and Provinces of Cuyo, this mite, commonly called 'Araña parda', 'Araña parda' or 'Bryobia', is declared to be an agricultural pest by Presidential Decree No. 34.079-32, dated 5 January, 1934. (*Boletín Oficial de la República Argentina*, Buenos Aires, 31 de enero de 1934, año XLII, núm. 11.897, pág. 1100).

* * The Ministerial Resolution No. 62 of 18 January, 1934 terminates the functioning of the Commission for organising the competition of apparatus for the control of the hoppers of the South American locust [*Schistocerca paranaensis*] and approves the decisions made by that Commission. (*Ibid.*, 16 de febrero de 1934, núm. 11.909, págs. 511 y 512).

* * The Presidential Decree No. 34.751-97 of 19 January, 1934 establishes the conditions under which the transport of potatoes will be permitted in the territory of the Federal capital. (*Ibid.*, núm. 11.909, págs. 488 y 489).

* * The Ministerial Resolution No. 67 of 23 January, 1934 charges the Direction of the 'Defensa Agrícola y Sanidad Vegetal' with the execution of the Presidential Decree No. 32.962, dated 21 December, 1933, relating to the exportation of fresh fruits.

The same Resolution defines, *inter alia*, the signification of the following terms:—

'Virtually free from insects and cryptogamic diseases', 'Damage of physical origin', 'Damage of mechanical origin'.

A scale for establishing the sanitary condition of fruits is also adopted. (*Ibid.*, 10 de febrero de 1934, núm. 11.898, págs. 25 y 26).

* * The Ministerial Resolution No. 117 of 16 February, 1934 establishes that railway companies, shipping companies or private persons may only accept for transport to the Southern zones of Bahía Blanca and the territories of Río Negro and Nenquén, consignments of fruits and vegetables packed in completely new cases of the type known as 'envase perdido'. (*Ibid.*, 6 de marzo de 1934, núm. 11.924, pág. 155).

* * The Presidential Decree No. 37.383-314 of 28 February, 1934, confirms the authorisation given to the Ministry of Agriculture, by 'Acuerdo de Ministros' No. 1089, to purchase a vacuum chamber for fumigation belonging to the Direction of the 'Defensa Agrícola y Sanidad Vegetal' and which will be installed at Mendoza. (*Ibid.*, 23 de marzo de 1934, núm. 11.938, pág. 900).

* * The Presidential Decree No. 37.843-351 of 7 March, 1934 authorises the Direction of the 'Defensa Agrícola y Sanidad Vegetal' to engage temporarily the personnel for the control of the South American locust [*Schist. paranensis*]. (*Ibid.*, 6 de abril de 1934, núm. 11.947, pág. 277).

* * By Ministerial Resolution No. 513 of 3 August, 1934 a Commission has been formed for studying a plan of control of Aleppo grass [*Sorghum halepense*]. (*Ibid.*, 16 de octubre de 1934, núm. 12.102, pág. 565).

Canada. — A Circular of the Destructive Insect and Pest Act Advisory Board, dated 17 October, 1934, announces that it has been decided to exempt mushroom spawn from the requirements of Regulation No. 1 (Foreign) of the Destructive Insect and Pest Act. Therefore, no permit will be required to cover importations of this commodity, neither will such importations be subject to inspection on arrival in Canada, nor are they required to be accompanied by a certificate of inspection issued in the country of origin. (Canada. Department of Agriculture. Destructive Insect & Pest Act Advisory Board. *Circular to Importers of Mushroom Spawn*. Ottawa, October 17, 1934, 1 p. [mimeographed]).

Spain. — By 'Orden' of 16 November, 1934, conditions are laid down with regard to the examination of the lands declared to contain locust eggs. (*Gaceta de Madrid*, Madrid, 21 noviembre 1934, año CCLXXIII, tomo IV, núm. 325, págs. 1436 y 1437).

Palestine (1). — By the Plant Protection Order (No. 3), 1934, dated 6th September, 1934, the Plant Protection Order (No. 2), 1934 [see this *Bulletin*, 1934, No. 10, pp. 226-227], shall be amended:—

(a) by the substitution in the place of the words 'All species of *Citrus* other than citrus fruits from Egypt and Cyprus' appearing in schedule I thereof of the words 'All species of *Citrus* other than citrus fruits from Egypt, Cyprus and Syria', and

(1) From documents communicated to the Institute by the Director of Agriculture and Forests, Jerusalem, Palestine.

(b) by the deletion of the words 'All species of *Prunus*, *Pyrus* and *Crataegus*' appearing in schedule I thereof, and

(c) by the substitution in the place of the words 'Citrus fruit from Egypt and Cyprus' appearing in schedule II thereof of the words 'Citrus fruit from Egypt, Cyprus and Syria', and

(d) by the substitution in the place of the words 'Apples and pears, whether nursery stock or fruit from the U. S. A., Canada, Australia or Hungary' appearing in schedule II thereof of the words 'Apples and pears, whether nursery stock or fruit from the U. S. A., Canada, Australia, Hungary or Rumania', and

(e) by the addition after the words 'All species of *Trypetidae*' appearing in schedule II thereof of the words '*Cryptorrhynchus gravis* and *C. mangiferae*'.

* * By the Plant Protection Regulations, 1933-1934, dated 14th September, 1934, regulation 3 of the Plant Protection Regulations, 1933 shall be amended by the substitution in the place of the expression '(seeds excepted)' therein appearing of the expression:— '(dried or conserved fruits and seeds excepted)'.

Rumania (1). — The Ministerial Decision No. 220659 of 3 November, 1934 establishes the following measures:—

Art. 1. — With a view to preventing the introduction into Rumania of San José scale (*Aspidiotus perniciosus* Comst.) from countries infested with this pest, it is forbidden to import fruit trees and bushes, ornamental plants, vines, stocks, cuttings, vine-shoots, roots of fruit trees and bushes, unless:—

(a) they come from an orchard, garden or nursery not infested with San José scale and if in a radius of 5 km. of the locality or in the neighbourhood of the locality of their origin the presence of San José scale has not been ascertained;

(b) they have been disinfected on leaving the orchard, garden or nursery by fumigation with hydrocyanic acid;

(c) they are accompanied by a phytosanitary certificate delivered by the competent authorities in which it is specially stated that the necessary conditions mentioned in (a) and (b) have been complied with.

Art. 2. — Countries considered infested are:— North and South America, North and South Africa, Australia, China, Japan, India, Mesopotamia, Asia Minor, Hungary, Austria, Jugoslavia, Spain and Portugal.

Art. 3. — The transit of the plants and parts of plants mentioned in article 1, coming from infested countries, is only authorised through wagons, closed and sealed, accompanied by a phytosanitary certificate complying with the conditions contained in article 1.

Phytosanitary certificates delivered more than 10 days before the day of expedition will not be accepted.

Art. 4. — Plants and parts of plants mentioned in article 1, coming from non-infested countries are admitted if they are accompanied by a phytosanitary

(1) Communication from the Director of Viticultural and Horticultural Services, Ministry of Agriculture and Lands, Bucarest, to the International Institute of Agriculture.

certificate delivered by recognised authorities and complying with the specifications mentioned in article 1 (a).

Art. 5. — Fresh flowers, bulbs and tubers of flowers are admitted without special permission on payment of legal taxes if they are accompanied by a phytosanitary certificate delivered by recognised authorities.

Art. 6. — The present Decision annuls the Decision No. 77957 of 23 March, 1925.

Senegal. — The Decree No. 1759 of 17 July, 1934, establishes certain measures for the protection of ground nuts against the attack of 'bruches' [*Pachymerus acaciae*]. In particular it is forbidden, from 1 November of each year, except in the ports of embarkation, to sell for exportation or to bring to the 'seccos' of the Insurance Societies, seeds from the harvest of the previous year.

From the same date, all 'seccos', warehouses and localities (except in the ports) intended for the reception of ground nuts, should be completely emptied of all seeds and disinfected. In addition the surroundings of these places should be cleaned within a radius of 25 metres.

The use of light traps is compulsory in all 'seccos', warehouses or localities intended for the storage of any quantity of seeds and the insects which are caught during the night should be destroyed. (*Journal Officiel du Sénégal*, Saint-Louis, 20 septembre 1934, soixante-dix-neuvième année, n° 1773, p. 738-739).

Uruguay. — By Presidential Decree, dated 17 July, 1933 the American ostrich [*Rhea americana*] is declared to be useful to agriculture in that it destroys injurious insects and for this reason the hunting of this bird is forbidden. At the same time the exportation of American ostriches in any form whatever is also forbidden. (*Ministerio de Industrias. Dirección de Agronomía. Publicación Mensual*, Montevideo, julio de 1934, año VII, n° 2, págs. 51 y 52).

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[In addition to the proceedings of the Conference printed in both French and English this volume contains the following appendices:—

(1) Outbreak areas and factors inducing transformation of the solitary phase of migratory locusts into the swarming phase, by B. N. Zolotarevsky. (In French only).

(2) The life cycle, particularly sexual maturation, in relation to climatic and other factors; and methods of study, by Rao Sahib Y. Ramachandra Rao.

(3) Migration and the factors inducing it with regard to all phases, and methods of their study, with special reference to the type of meteorological maps likely to be of assistance, by A. P. G. Michelmores.

(4) Methods of field survey in locust research, by F. D. Golding.

(5) Ecology and habits of locusts in an invasion area (Uganda) with special reference to *Locusta migratoria migratorioides* (Reiche and Fairmaire) ph. *transiens*, by H. B. Johnston.

(6) Locust diseases, by J. C. F. Hopkins.

(7) Fundamental research on the locust problem, by B. P. Uvarov.

(8) The destruction of locusts in flight by means of a poison dust (sodium arsenite) delivered from aircraft, by H. H. King. This report is accompanied by two sub-appendices, also in English, reporting the observations of W. Allan and J. K. Chorley on the same subject.

(9) The use of aeroplanes in locust control, by T. Naudé.

(10) Further investigations on the Desert Locust, *Schistocerca gregaria* (Forskål), by the United Kingdom delegation.

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(12) Research carried out under the auspices of the Italian Government on *Docostaurus maroccanus* (Thunberg) and on *Calliptamus italicus* (Linn.), by Filippo Silvestri.

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(15) Summary of the work done on the *Schistocerca gregaria* (Forskål), at Lyallpur during the years 1931-33, by Afzal Husain.

- (16) A brief summary of investigation on locust problems in the Union of South Africa, by J a c o b u s C. F a u r e.
- (17) The occurrence of the Tropical Migratory Locust, *Locusta migratoria migratorioides* (Reiche and Fairmaire) in the Union of South Africa in 1933-34, and in South West Africa in 1931-34, by J a c o b u s C. F a u r e.
- (18) The swarming of *Schistocerca gregaria* (Forskål) in the Union of South Africa and in South West Africa in 1934, by J a c o b u s C. F a u r e.
- (19) Declarations and resolutions submitted by the Belgian delegation. (In French only).
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Phytophthora omnivora, *Phacidiella discolor*, *Nectria galligena*, *Alternaria* sp., *Cladosporium herbarum*, *Trichothecium roseum*. Non-parasitic diseases:— 'Rindenbräune' or Scald, 'Frostflecken' or Soft Scald, and several 'Fruchtfleischbräune'].

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INTERNATIONAL BULLETIN OF PLANT PROTECTION

DISCOVERIES AND CURRENT EVENTS *

Eritrea: Locusts (1).

In the western lowlands on 1 November, 1934, a dense swarm of *Locusta migratoria migratorioides*, of a reddish colour, coming from the West passed over Sabderat towards the East.

On the 25th a small swarm was reported at Aicota, flying from West to East.

No damage has been done to crops.

During the month of December, 1934 neither eggs, hatching of hoppers, nor swarms of locusts have been reported throughout the whole Colony.

United States of America: Entomological Records (2).

The following are the more important entomological records in the United States for October, 1934:

Heavy migrations of the beet webworm (*Loxostege sticticalis* L.) occurred during the early part of the month in Nebraska and Kansas. The migrating worms were so numerous that when their path led across a railroad they interfered with the movement of freight trains. They did very serious damage to a variety of crops in their migration.

The Japanese beetle (*Popillia japonica* Newm.) was found this year in St. Louis, Mo., Indianapolis, Ind., and Charlottesville, Va.

In general, infestations by the hessian fly (*Phytophaga destructor* Say) in the States where surveys have been made were below normal. In Kansas, however, infestations seemed heavier than last year.

Large numbers of chinch bugs (*Blissus leucopterus* Say) were entering winter quarters in Illinois and Iowa.

The European corn borer (*Pyrausta nubilalis* Hbn.) has been reported as now occupying the entire strip of coast from Maine to Cape Charles, on the Eastern Shore of Virginia.

* Under this and the next heading the countries are arranged in French alphabetical order.

(1) Communication from the official correspondent of the Institute, Dr. ROLANDO GUIDOTTI, Chief of the Agricultural Bureau of Eritrea, transmitted to the Institute by the Government of the Colony.

(2) Communication from Mr. LEE A. STRONG, Chief of the Bureau of Entomology and Plant Quarantine, United States Department of Agriculture, Washington, D. C.

The corn ear worm (*Heliothis obsoleta* Fab.) was reported as generally abundant and destructive throughout the greater part of the country. During October it was extremely destructive to tomato fruit in Utah and California.

The leafhopper *Cicadula maidis* De Long and Wolcott, a pest of sugar-cane in the West Indies, which was found last year in San Bernardino County, Calif., was discovered this October in Los Angeles County. It is now known to be present in the eight southern counties of California from Kern and Santa Barbara to the Mexican border.

Serious damage to soybeans by the velvetbean caterpillar (*Anticarsia gemmatilis* Hbn.) was reported from Louisiana, North Carolina, and South Carolina.

The flat-headed apple tree borer (*Chrysobothris femorata* Oliv.) was reported as seriously damaging fruit and shade trees in Kansas and Illinois.

A bostrichid beetle, *Stephanopachys pacificus* Csy., was reported for the first time as a pest of apples in Washington State. The adults were eating holes in the fruit.

A large green June beetle, *Cotinis texana* Csy., was collected late in September in southern California, apparently the first record of this species from that State.

The southern green stink bug (*Nezara viridula* L.) was reported as unusually abundant in the Gulf region from Florida to Louisiana.

The tomato crop in southern California has been severely damaged by the tomato pin worm (*Gnorimoschema lycopersicella* Busck).

The banded cucumber beetle (*Diabrotica balteata* Lec.) was quite generally reported in the Gulf region and the South Atlantic States from Mississippi to South Carolina. Reports of considerable damage by this insect were also received from southern California.

The first record of serious damage by the bean looper (*Autographa egea* Guen.) was received from Orange County, Calif., late in September.

Sugar beets were seriously damaged by curly top caused by the beet leafhopper (*Eutettix tenellus* Bak.) throughout Utah and the western slope of Colorado.

Heavy defoliation by a species of *Ellopi*a was observed in the State forest near Warwick, Mass.

Southern Rhodesia: New Records of Fungus Diseases for the Year Ending May 31st., 1934 (1).

Locusts.

Numerous cases of diseases among swarms of the Red Locust (*Nomadacris septemfasciata* Serv.) have been reported during April, May and June, 1934; in certain instances large swarms appear to have been completely killed out. Num-

(1) Communication from the official correspondent of the Institute, Mr. J. C. F. HOPKINS, D. Sc. (Lond.), A. I. C. T. A., Senior Plant Pathologist, Department of Agriculture, Salisbury, Southern Rhodesia.

bers of individuals have been examined from time to time and found to be attacked by *Empusa grylli*. The fungus corresponds with the description given by Doidge in *Trans. Roy. Soc. South Africa*, ix, 1, 1921; conidia, conidiophores, resting spores and internal mycelium being quite typical. Many individual insects affected by the disease failed to show conidiophores and conidia, but upon dissection the gut was found to contain mycelium and resting spores. The latter were spherical, with thick double walls, regular in size and shape. The conidia averaged $38 \times 30 \mu$ in diameter and the resting spores 30.5μ . The club-shaped conidiophores were irregular in size.

Other fungi, not yet determined, have been found associated with disease in locusts. One has been grown in artificial culture.

New records of plant diseases are:—

<i>Antirrhinum</i> sp.	Collar Rot	<i>Rhizoctonia solani</i> Kühn.
<i>Arachis hypogaea</i>	Pod Rot	<i>Rhizopus nigricans</i> Ehrenb.
<i>Citrus aurantium</i> (Re-		
cords supplied by G.		
R. Bates)	Brown Rot	<i>Phytophthora citrophthora</i> (Sm. and Sm.) Leonian.
	Centre Rot.	<i>Fusarium solani</i> (Mart.) App. & Wr.
	Fruit Rot	<i>Trichoderma lignorum</i> Tode.
	Stem-end Rot	<i>Diaporthe citri</i> Wolf.
	» » »	<i>Alternaria citri</i> Pierce.
	» » »	<i>Fusarium diversisporum</i> Sherb. affn.
	» » »	<i>F. solani</i> (Mart.) App. & Wr.
	» » »	<i>F. moniliforme</i> Sheld. (var. <i>erumpens</i> Wr. & Rg. affn.).
	» » »	<i>F. oxysporum</i> Schl. f. 1 Wr.
	Stylar-end Rot	<i>F. lateritium</i> Nees (near var. <i>majus</i> Wr.).
	» » »	<i>F. orthoceras</i> App. & Wr.
	» » »	<i>F. oxysporum</i> Schl.
<i>Dahlia</i> sp.	Leaf Spot.	<i>Cercospora grandissima</i> Rangel.
<i>Fragaria</i> (cultivated)	Black Root Rot.	<i>Rhizoctonia solani</i> Kühn and other fungi.
	Hard Fruit Rot	<i>Rhizoctonia solani</i> Kühn.
	Mildew	<i>Oidium</i> only. (? <i>Sphaerotheca humuli</i> (Fries) Burr.).
	Mouldy Fruit Rot	<i>Rhizopus nigricans</i> Ehrenb.
	Storage Rot	<i>Cladosporium herbarum</i> (Pers.) Link affn.
<i>Gerbera jamesonii</i>	White Blister	<i>Cystopus cubicus</i> de By.

<i>Luffa cylindrica</i> . . .	Mildew	<i>Erysiphe cichoracearum</i> DC. (<i>Oidium</i> only).
<i>Nicotiana tabacum</i> . .	Mould	<i>Aspergillus sulphureus</i> (Fres.) Thom. & Church.
	Stem Rot.	<i>Rhizoctonia solani</i> Kühn.
<i>Panicum maximum</i> . .	Ear Fungus	<i>Cerebella cynodontis</i> Syd. affn.
<i>Petroselinum sativum</i> .	Leaf Spot	<i>Septoria petroselini</i> Desm.
<i>Portulaca oleracea</i> . . .	White Blister	<i>Albugo portulacae</i> (DC.) Kze.
<i>Rosa</i> sp.	Anthraxnose	<i>Sphaceloma rosarum</i> (Passer.) Jenk.
<i>Senecio latifolius</i> . . .	Mildew	<i>Oidium</i> only. (? <i>Erysiphe ci-</i> <i>choracearum</i> DC.).
<i>Sorghum vulgare</i> . . .	Smut	<i>Sphacelotheca sorghi</i> (Link) Clint.
<i>Vicia faba</i>	Rust	<i>Uromyces fabae</i> (Pers.) de By.
<i>Vigna catjang</i>	Root Rot	<i>Rhizopus nigricans</i> Ehrenb.
<i>Vigna triloba</i>	Rust	<i>Aecidium vignae</i> Cke.

Southern Rhodesia : Locust Invasion, 1932-1934 (1).

Monthly Report No. 23. October, 1934.

The locust position during October has become increasingly menacing, swarms of the Red Locust (*Nomadacris septemfasciata*, Serv.) having been reported from all parts of the Colony. Many of the reports refer to swarms of very large size. Towards the end of the month large swarms invaded the Colony from Northern Rhodesia flying southward.

Swarms have continued to haunt the region of the eastern border, where they have constituted a serious threat to early crops and grazing, as well as to plantations and have appreciably influenced farming operations.

The direction of flight within the Colony to the end of the month has shown no definite trend. There has as yet been no indication of a southward pre-breeding migration from the Colony.

Ovaries are now developing in the females, whilst the males appear sexually to be almost fully developed and in some parts are beginning to change colour. From the behaviour of the insects on the eastern border, it appears possible that the swarms at present infesting that region may remain to lay. Apart from the larger and denser swarms, the locusts here are scattered over a wide area, flying aimlessly about. The males in this region are definitely changing colour.

Enemies and Diseases:

No records. All specimens examined have appeared to be quite healthy, and there have been no reports of avian or other enemies concentrating on the swarms.

(1) Communication from the official correspondent of the Institute, Mr. RUPERT W. JACK, Chief Entomologist, Department of Agriculture, Salisbury, Southern Rhodesia.

Damage:

Some damage to citrus plantations, early maize and grazing has been reported from various parts of the Colony.

Preparation for Anticipated Hopper Campaign:

Preparations are well forward for the anticipated campaign against hoppers. All pumps have been overhauled and further supplies are on order for early delivery. A supply of arsenite of soda powder equal to that used during the last season's campaign has already been provided and further supplies can be obtained if necessary.

LEGISLATIVE AND ADMINISTRATIVE MEASURES

Algeria. — The Decree of 11 October, 1934 relative to the importation into Algeria of fresh fruits coming from countries infested with San José scale (*Aspidiotus perniciosus*), adds Portugal to the the list of contaminated countries. (*Journal Officiel de l'Algérie*, Alger, 26 octobre 1934, 8^e année, n^o 43, p. 722).

Germany. — According to paragraph 4 of the Ordinance of 14 August, 1934 new regulations have been established relative to the quality of seed potatoes.

The following indications give the percentage in weight of the maximum rate of diseased, injured or mis-shapen potatoes which will be permitted without a diminution in the price.

Alterations: Will be permitted when they do not diminish the value of the potatoes for planting (yellow marks in the inside, green tubers, slight injuries, slight attacks of common potato scab [*Actinomyces*], etc.); merchandise will be considered exempt from common potato scab if the marks do not cover more than 5 % of the surface of the tuber.

Serious injuries (diminishing the value of the tubers for planting): 1,5 % for selected potatoes, 2 % for ordinary merchandise.

Diseases, exceptions are made for wet rot (tubers showing symptoms of disease or found diseased when cut open): 1 % for selected potatoes, 2 % for ordinary merchandise.

Wet rot: $\frac{1}{4}$ % at the place of expedition; 2 % immediately after arrival at the place of destination.

Damage produced by frost: Damage incurred in transport, even if the seller has taken the necessary precautions, will not be indemnified.

If the alterations exceed the limits indicated above the purchaser has the right to a reduction in price. He can, however, refuse to accept the merchandise if the alterations exceed the following limits:

Serious injuries: Selected potatoes 3 %, ordinary merchandise 6 %.

Diseases: Selected potatoes 2 %, ordinary 4 %.

Wet rot and frost-bitten potatoes: At the place of expedition 1 %; immediately after arrival at the place of destination 3 %.

Finally, all signs of wart disease [*Synchytrium endobioticum*] give the right to refusal of the consignment. (*Ämtliche Pflanzenschutzbestimmungen*, Berlin, 1. November 1934, Bd. VI, Nr. 7, S. 121-124).

** By Ministerial Notification of 20 October, 1934, it is permitted, by abrogation of the dispositions of 17 July, 1934 concerning the use of highly poisonous products [see this *Bulletin*, 1934, No. 11, p. 247], to employ for the control of *Hylobius abietis* arsenical washes; the content in arsenic, however, should not exceed 1 %. (*Ibid.*, 1. Dezember 1934, Nr. 8, S. 148).

** The provisions adopted on 24 October, 1934 by the Corporation of Agriculture ('Reichsnährstand') concerning the planting of varieties of potatoes non-resistant to wart disease [*Synchytrium endobioticum*] establish that these varieties will be inspected for the last time in 1940. They can then be put on the market for the last time for the season 1941. Exceptions can be made for potatoes for planting intended for export.

Varieties non-resistant to wart disease and recognised as valueless for the agriculture of the country can be abolished before the end of the term indicated above. (*Ibid.*).

Germany (Prussia). — By Ordinance of the Governor of the province of Hanover, dated 23 August, 1934, relative to the control of asparagus fly [*Platybaraea poeciloptera*] and rust [*Puccinia asparagi*], the Ordinance of 10 October, 1932 [see this *Bulletin*, 1933, No. 1, p. 10] has been abrogated. This Ordinance has been replaced by local Ordinances of the presidents of the government districts of Hildesheim (22 September, 1934), Hanover (31 August, 1934), Lüneburg (30 August, 1934), and Stade (1 September, 1934).

In these Ordinances it is prescribed that the stalks of asparagus should be cut each year so that the remaining part of the stalks left in the ground should not be more than 10 cm in length. This should be executed before 15 October for young plantings and before 1 December for plantings already in bearing. The parts cut off should be immediately destroyed by fire. All parts of stalks remaining in the ground should be carefully re-covered with earth. It is forbidden to take the aerial portions of the plants outside the asparagus beds with the exception of the berries intended for seed. The berries must be gathered on the spot.

In cases where asparagus rust appears exceptionally early in the season, this work may be carried out earlier.

The ends of asparagus stalks left in the beds to mark the lines of plants should be removed in spring before 15 April and burnt on the spot.

The prescribed work must be carried out by owners and usufructuaries of asparagus beds.

All contraveners will be punished. In addition, the Police may order that the work should be carried out by other persons at the expense of those interested. (*Ämtliche Pflanzenschutzbestimmungen*, Berlin, 1. Dezember 1934, Bd. VI, Nr. 8, S. 154-155).

*** By Police Ordinance of 29 October, 1934, a general control of rats has been organised in Berlin. The operations lasted from 24 to 27 November, 1934.

The provisions concerning the application of this Ordinance oblige all owners or tenants of houses and lands, including directors of colonies of small holdings, to apply the officially recognised means of control during the time indicated in the Ordinance and to distribute them in sufficient quantities in all places habitually frequented by rats.

The names of 21 officially recognised preparations are given with the name of the maker. All these preparations have a squill [*Urginea scilla*] basis and are not sold without special permission. Each receptacle should be accompanied by detailed instructions for use and the seller of these preparations is obliged to deliver to the purchaser a certificate indicating the name and quantity of the product and the date of purchase. A model of this certificate is attached to the Ordinance. Persons interested may employ an officially recognised rat-catcher to purchase the means of control and to carry out the necessary work.

Immediately after the last day of control, all rat-holes should be carefully stopped up and the dead rats found either buried or burnt.

Police agents and all persons charged with the supervision of this work have free access to places where the means of control have been deposited. They can demand to be shown the certificate of purchase.

Free information bureaux have been established. (*Ibid.*, S. 151-154).

** By Police Ordinance (undated) relative to the protection of fruit trees and bees in the greater part of the circumscription of Pomerania, owners of fruit trees are obliged to treat their trees each year before blossoming with carbolineum, the efficaciousness of which has been previously recognised officially and to follow this treatment after 3 days, at the earliest, by another treatment with a Bordeaux mixture at 1 or 2 % or with another officially recognised product.

The Police authorities will put the necessary instruments and apparatus at the disposition of persons interested on payment of a fixed charge. Proprietors having the necessary apparatus and staff expert in their use can receive premission to carry out the work themselves.

With regard to the protection of bees, it is forbidden to spray the blossom of fruit trees with arsenical preparations. Spraying of trees situated at less than 50 metres distant from the hives will be executed only in the evening and after agreement with the beekeepers. (*Ibid.*, S. 156).

Germany (Baden). — By Decree of 24 October, 1934 relative to the control of pests of fruit trees, it is prescribed that the trees should be pruned each year before 1 March, the dead branches removed and the wounds resulting from this

work carefully treated. All aged trees, those which on account of too heavy a crown cannot be cleared and all dead and dying trees should be cut down and removed.

All mistletoe [*Viscum*] plants should be removed, also mosses, lichens, caterpillar nests and splinters of old bark.

The local Police authorities, in accord with the local chief of the Corporation of Agriculture, will charge experts or Commissions with the work of seeing that these prescriptions are carried out.

The Police authorities will compel defaulters to execute the work considered necessary and if it is not carried out within the stated time the Police will have the work carried out at the expense of those interested. (*Amliche Pflanzenschutzbestimmungen*, Berlin, 1. Dezember 1934, Bd. VI, Nr. 8, S. 150).

Germany (Württemberg). — By Decree of 3 October, 1934 relative to the control of pests of fruit-trees, provisions have been adopted in Württemberg approximately analogous to those adopted in Baden by Decree of 24 October, 1934 [see this *Bulletin*, pp. 35-36]. (*Amliche Pflanzenschutzbestimmungen*, Berlin, 1. Dezember 1934, Bd VI, Nr. 8, S. 157).

French Colonies. — By Decree of the [Minister of Colonies, dated 18 July, 1934, article 6 of the Ministerial Decree of 22 February, 1926 relative to the introduction of cotton seed into the French Colonies with a view to protection against the pink bollworm [*Platyedra gossypiella*], has been modified thus:—

‘The regulations of the present Ministerial Decree are applicable to the products enumerated in article 1 intended for importation or transit through all the French Colonies except Madagascar, New Caledonia, French Equatorial Africa, Indo-China and the New Hebrides.

‘The prohibitions contained in article 1 of the present Ministerial Decree are applicable to products coming from Egypt, the Anglo-Egyptian Sudan, Italian Somaliland, former German East Africa, British East Africa, Nigeria, Sierra Leone, Angola, Lagos, the Belgian Congo, Algeria, Tunis, Morocco, Zanzibar, Asia, Brazil, Mexico, Hawaii, the Solomon Islands, Australia, the British West Indies, Texas, Louisiana, New Mexico, and Greece’. (*Journal Officiel de la République Française*, Paris, 3 août 1934, LXVI^e année, n° 181, p. 8011-8012).

Belgian Congo. — The Ordinance N. 29/Agri. of 9 March, 1934, which came into force on 1 June, 1934, includes insectivorous birds among the animals the hunting of which is forbidden throughout the whole Colony. (Royaume de Belgique. Ministère des Colonies. *Bulletin Agricole du Congo Belge*, Bruxelles, juin 1934, vol. XXV, n° 2, p. 299-307).

* * By Ministerial Decree No. 179 of 20 July, 1934, the locust invasions in the Province of Lusambo are declared to be a public calamity.

All occupiers or part occupiers of land where locust eggs have been laid and where hoppers and adults have appeared, are obliged to immediately advise the nearest territorial authority who will prescribe the following means of destruction: collection and destruction of eggs by fire; destruction of hoppers in ditches; collection and destruction of adults at dawn when the insects, made torpid by the dew, are unable to fly.

It is strictly forbidden to drive away the hoppers, to attempt to drive them away or permit them to be driven into neighbouring lands. (*Bulletin Administratif du Congo Belge*, Léopoldville-Kalina, 10 septembre 1934, 23^{me} année, n° 17, p. 567-568).

Danzig (Free City of). — A phytosanitary Convention between the Free City of Danzig and Poland was signed on 5 August, 1934.

The Free City of Danzig will apply, within its territory, all regulations concerning the protection of plants which exist in Poland. The regulations which Poland will make in the future will be immediately followed by the application of identical regulations in the territory of Danzig and which will enter into force if possible on the same day as the Polish regulations. If the Free City of Danzig considers it necessary to take phytosanitary measures in a region not yet provided for by the Polish regulations, these measures should not impede trade between the two contracting countries.

Decisions arrived at following researches and given by the central institutions of the two countries will be recognised as reciprocally valid.

The Plant Protection Service of the Free City of Danzig will form part of the Plant Protection Service of Poland.

The two contracting parties engage to abolish all phytosanitary control in reciprocal trade on their frontiers. They also engage to respect the regulations in force in the two countries concerning the trade in plants and parts of plants.

This Convention will remain in force for two years and will be automatically renewed if notice is not previously given by one of the two parties. (*Amtliche Pflanzenschutzbestimmungen*, Berlin, 1. November 1934, Bd. VI, Nr. 7, S. 126-127).

Eritrea. — By Decree No. 7010 of 13 December, 1934, it is forbidden to import into Eritrea Cactaceae coming from all foreign countries with a view to protecting the cultivation of prickly pears [*Opuntia*] in the Colony against insects, fungi and bacteria hosts of foreign Cactaceae.

Foreign Cactaceae subsequently expedited to Eritrea will be seized by the Direction of Customs Services and destroyed, even if they are accompanied by certificates of health or origin, without payment of any indemnity. (*Bollettino Ufficiale del Governo dell'Eritrea*, Asmara, 15 dicembre 1934, anno XLIII, n. 23, pp. 589-590).

Spain. — By Decree of the Presidency of the Council of Ministers, dated 22 June, 1934, the regulation of exports, the inspection and control of same, determination of the qualities of the various products sent abroad, types of packages and everything regarding the conditions required for the despatch of merchandise outside the country, is under the control of the Ministry of Industry and Commerce and is carried out by means of the Direction General of Commerce and Customs and Excise.

Sanitary functions, such as the delivery of phytopathological certificates and health certificates for animal products, are under the control of the Ministry

of Agriculture and will be carried out by means of the technical Services dependent on the Direction General of Agriculture, Animal Husbandry and Animal Industries.

The said sanitary functions, when in respect to documents which have to accompany products destined for a country where contingents have been established relative to importation, will be subject to the exigencies of the corresponding internal regulations, the corresponding documents being delivered with the technical guarantees and by the competent officials, within the limits established by the Direction General of Commerce and Customs and Excise for such regulations. (*Gaceta de Madrid*, Madrid, 21 junio 1934, año CCLXXIII, tomo II, núm. 175, págs. 1928 y 1929).

* * By Decree of the Presidency of the Council of Ministers, dated 13 October, 1934, relative to the export of oranges and other citrus fruits to foreign markets, it is prohibited, *inter alia*, to export fruits which are damaged, frost-bitten, badly bruised or infested by pests such as 'piojo rojo' [*Chrysomphalus dictyospermi*], 'piojo negro' [*Parlatoria 'zyzyphi*], 'serpeta' [*Lepidosaphes pinnaeformis*] 'negrilla' [*Pleosphaeria citri*], or other parasites. (*Ibid.*, 16 octubre 1934, tomo IV, núm. 289, págs. 362 a 367).

* * By 'Orden' of 13 November, 1934, phytosanitary or phytopathological inspection has been made compulsory for oranges and other citrus fruits intended for export, in accordance with the dispositions in the Decree of 13 October, 1934, and as a special guarantee for importing countries.

The phytopathological inspection will be carried out by the officially authorised agronomy engineers of the National Phytopathological Service, who will deliver the corresponding certificate conforming to the model agreed upon by the international Conventions or to the special exigencies of the importing countries.

The phytopathological certificate will be independent from other documents necessary for exportation and the said certificate will contain no notifications other than those of the Inspector of the National Phytopathological Service.

The Customs Offices will not despatch nor authorise the expedition of oranges or any other citrus fruits which are not accompanied by the corresponding certificate of phytopathological inspection. (*Ibid.*, 14 noviembre 1934, núm. 318, pág. 1285).

France. — A Presidential Decree of 12 October, 1934, reads as follows:—

Art. 1. — The Commissioner of the Republic in the territory of Cameroon is authorised to issue, in Executive Council and on the advice of the Chamber of Agriculture, Decrees rendering compulsory the upkeep of plantations and the pruning of trees and shrubs, and ordering the cutting and destruction of diseased and superfluous plants, the collection and burning of fruits and parts of plants attacked by disease, and the spraying with fungicides and insecticides of all plantations requiring such sanitary measures.

Art. 2. — The supervision of plantations for their protection against diseases and for the application of prescribed sanitary measures is carried out by the auxiliary officers of the 'Procureur' of the Republic and the officers of the Agricultural Service, sworn in for this purpose.

Art. 3. — On information received from one of the above mentioned officers a Commission, on which European and native planters will be represented, will verify the existence of diseases and will give advice on the necessary measures to be taken to prevent the spreading of the diseases and to the curative treatment that is to be applied.

Art. 4. — Infractions of Decrees issued in conformity with Art. 1, will be punished by a fine of 50 to 2 000 francs for Europeans, and which, in the case of a second offence, can be increased to 5 000 francs. For natives the penalties under native legislation will be applied. Those who, on account of local regulations cannot be judged according to native legislation, will be brought before the native tribunal of the first grade.

Art. 5. — In the case of defaulting planters, the Administration can, at the expense of those interested, undertake all the operations provided for in Art. 1, also the work of protection against the diseases prescribed for by the Decrees issued in conformity with this Decree without prejudice to the penalties provided for in Art. 4.

Art. 6. — Article 463 of the penal code may be applied. (*Journal Officiel de la République Française*, Paris, 23 octobre 1934, LXVI^e année, n^o 249, p. 10631-10632).

* * The Ministerial Decree of 16 October, 1934, applies to seeds of wheat and oats for sowing and to potatoes for planting the regulations contained in the Decree of 16 November, 1932 which establishes a catalogue of the species and varieties of cultivated plants. According to Article 3 of the said Ministerial Decree only those potato growing associations will be approved by the Minister of Agriculture which are admitted to the phytopathological inspection of crops instituted by the Inter-ministerial Decree of 13 April, 1934 [see this *Bulletin*, 1934, No. 6, p. 129].

The foreign associations exercising phytopathological inspection in the field and who desire to import selected potatoes into France should, to be approved, send an application to the Ministry of Agriculture together with all regulations, certificates, marks and other documents proving they are capable of efficiently exercising this inspection. The list of foreign associations which have been approved will be published each year by the 'Office de Renseignements agricoles' of the Ministry of Agriculture. (Ministère de l'Agriculture. Direction de l'Agriculture. *Bulletin de l'Office de Renseignements Agricoles*, Paris, 1^{er} novembre 1934, année 1934, n^o 21, p. 471-472).

* * By Ministerial Decree of 30 October, 1934, a Commission is instituted at the Ministry of Agriculture, charged with studying the problems relative to the use of toxic substances for the control of parasites, insects and animals injurious to agriculture. (*Journal Officiel de la République Française*, Paris, 1^{er} novembre 1934, LXVI^e année, n^o 257, p. 10945).

* * The Committee of seed-control of the Ministry of Agriculture has established a catalogue of species and varieties of potatoes and oats cultivated in France up to 1 October, 1934. In this catalogue are specified the

potatoes which are resistant and non-resistant to wart disease [*Synchytrium endobioticum*]. (Ministère de l'Agriculture. Direction de l'Agriculture. *Bulletin de l'Office de Renseignements Agricoles*, Paris, 15 janvier 1935, année 1935, n° 2, p. 40-42).

* A notice to exporters of potatoes to Switzerland establishes that consignments of tubers of French origin should be accompanied by a certificate of origin in conformity with the model reproduced in the said notice and stating that the land on which they were gathered, also neighbouring land within a radius of 5 kilometres, is free from wart disease [*Synchytrium endobioticum*]. (*Journal Officiel de la République Française*, Paris, 13 décembre 1934, LXVI^e année, n° 292, p. 12200).

Italy. — By Ministerial Decree of 30 September, 1934, owners of vineyards in the province of Piacenza are grouped in a syndicate of viticulture according to the terms of the Law No. 987 of 18 June, 1931 [see this *Bulletin*, 1931, No. 9, p. 166] containing enactments relating to the protection of cultivated plants and agricultural products against diseases and pests and to the services relating thereto. (*Bollettino Ufficiale del Ministero dell'Agricoltura e delle Foreste*, Roma, 21 novembre 1934, anno VI, n. 27, p. 5132).

* *. By Royal Decree-Law No. 2025 of 10 December, 1934 liquid hydrocyanic acid for use in the control of scale insects of citrus trees will be imported for a limited time free of customs duties and with a reduction in the tax on the exchange up to an amount of 600 kilos per annum. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 24 dicembre 1934, anno 75^o, n. 301, pp. 5825-5826).

Syrian Republic. — In view of the spreading in Lebanon of grape phylloxera [*Phylloxera vastatrix*], the president of the Republic of Syria, by Decree No. 2551 of 25 June, 1934, has strictly prohibited the importation into Syria of fresh grapes coming from Lebanon and packed in cases containing vine leaves. (*Journal Officiel de la République Syrienne*, Damas, 30 juin 1934, 16^{me} année, n° 12, p. 132).

Switzerland. — By Ordinance of the Federal Department of Public Economy, dated 24 November, 1934, the certificate of origin, provided for in article 1 of the Decree of the Federal Council of 5 October, 1925, concerning the control of wart disease of potatoes [*Synchytrium endobioticum*], will also be required for consignments of potatoes coming from France, as from 15 December, 1934. (*Recueil des Lois Fédérales*, Berne, 28 novembre 1934, n° 39, p. 1401).

Tunis. — By Decree of 15 October, 1934, the measures laid down by Decree of 26 July, 1932 [see this *Bulletin*, 1933, No. 1, p. 14] for the prevention of the introduction of San José scale (*Aspidiotus perniciosus*) are applicable to consignments coming from Portugal. (*Journal Officiel Tunisien*, Tunis, 23 octobre 1934, 52^e année, n° 88, p. 2244).

* * By Decree of 18 October, 1934, owners or tenants, on any terms, of rural property are obliged to undertake the destruction of starlings [*Sturnus vulgaris*] at their own expense from 1 October to 1 March of each year. The destruction will be carried out by every means, such as shooting, traps, nets, etc. (*Ibid.*, 30 octobre 1934, n° 90, p. 2277).

* * By Decree of 20 October, 1934, the list of plant and animal parasites dangerous to crops [see this *Bulletin*, 1933, No. 1, p. 14] and to which are applicable the measures contained in the Decree of 11 July, 1932 [see this *Bulletin*, 1932, No. 12, pp. 208-210], is completed thus:—

I. — Plant Parasites.

Neocosmospora vasinfecta or bayoud (date palm). (*Ibid.*, 6 novembre 1934, n° 92, p. 2338).

Yugoslavia. — By Ministerial Decision No. 80684/II, dated 4 December, 1934, the importation of living plants or parts of living plants from all countries declared, or which will be declared, infested by San José scale (*Aspidiotus perniciosus*) is forbidden as from 1 January, 1935. Underground parts of plants and seeds of all kinds are not included in this prohibition. The provisions of the Regulation apply to the importation of potatoes and fruits. (*Službene Novine*, Beograd, 14 detsembra 1934, godina XVI, broj 289-XXXVII, strana 1165).

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The geographical area covered is that of Greenland, Newfoundland, Canada and the continental United States of America, including Alaska and the Aleutian islands. One hundred and twenty-eight subtropic species which invade the United States of America along its southern border are also included in the Manual.

According to the classification adopted, the majority of *Uredinales* are divided into two families: *Melampsoraceae* (with the tribes *Pucciniastreae*, *Cronartieae*, *Melampsoreae* and *Phakopsoreae*) and *Pucciniaceae* (with the tribes *Ravenelieae*, *Phragmidieae* and *Aecidieae*). A chapter follows entitled 'Form-genera' including the genera *Aecidium*, *Peridermium*, *Caecoma*, *Uraecium* and *Uredo*.

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The title of the book has now been slightly modified and the matter revised and brought up to date with the most recent information by the author himself and two of his collaborators at the Station, Dr. M. Staehelin and Mr. P. Bovey. The work is divided into two parts.
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INTERNATIONAL BULLETIN OF PLANT PROTECTION

DISCOVERIES AND CURRENT EVENTS *

England and Wales: New and Interesting Phytopathological Records for the Year 1934 (1).

(a) Plant parasitic fungi and bacteria encountered in England and Wales during 1934 and believed not to have been found there previously:—

Wojnowicia graminis (Mc Alp.) Sacc., on Wheat.

Marssonina daphnes Sacc., on *Daphne mezereum*.

Bacterium vignae Gardn. and Kendr. var. *leguminophila* Burkh., on seeds of Dwarf Bean.

Bacterium rathayi (E. F. Sm.) Stapp, on Cocksfoot grass. (First seen in 1933).

(b) The parasites mentioned below are not new but their occurrence on the hosts mentioned does not appear to have been noted previously in England and Wales:—

Rosellinia necatrix (Hart.) Berl., attacking Nectarine.

Sclerotinia sclerotiorum (Lib.) de Bary, causing a disease of *Lupinus polyphyllus*.

Helicobasidium purpureum (Tul.) Pat. (*Rhizoctonia crocorum*), causing wilting and death of Carnations.

Armillaria mellea (Vahl.) Fr., attacking Fig, *Paulownia imperialis*, *Davidia involucrata* and *Viburnum tinus*.

Thielaviopsis basicola (Berk.) Ferraris, on roots of Celery and Liliun.

Ochropsora sorbi Diet., in its uredo- and teleutospore stages, on an unidentified species of *Pyrus* or *Prunus*. Only the acedial stage (on *Anemone nemorosa*) has previously been noted in this country.

(c) The pests mentioned below are not new, but their attack on the hosts mentioned does not appear to have been noted previously in England and Wales:—

Heterodera schachtii Schmidt, on Sugar Beet.

Limonius aeruginosus Ol. — injury to Apple blossom.

Helophorus nubilus F. — damage to Wheat.

* Under this and the next heading the countries are arranged in French alphabetical order.

(1) Communication from the Ministry of Agriculture and Fisheries, London, official correspondent of the Institute.

In respect to the outbreak of the Colorado Beetle (*Leptinotarsa decemlineata*) at Tilbury [see this *Bulletin*, 1933, No. 10, p. 226, and 1934, No. 3, p. 51] it need only be stated here that no place in Great Britain is now known to be infested by the beetle although it is necessary to wait until next season before claiming that the pest has been finally eradicated.

Eritrea: Locusts (1).

During the month of January, 1935, a small reddish swarm of locusts were reported at Tessenei (Western Lowlands) flying from East to West.

United States of America: Tobacco Diseases for 1934 in the Atlantic Coast Region (2).

Root-knot (*Heterodera marioni*) did considerable damage in North Carolina, South Carolina, and Georgia. Promising progress toward control has resulted from rotation experiments conducted at the Coast Plains Experiment Station in Georgia but severe losses continue in areas for which suitable rotations have not been developed. Both the yield and the quality of the crop suffer and growers in the South Carolina belt are reported generally to be abandoning tobacco culture on the Norfolk types of soil because of the heavy infestation of root-knot. The Norfolk is one of the best soil types for the production of high quality cigarette tobacco.

Granville Wilt (*Bacterium solanacearum*), another soil borne disease, was very destructive in three counties in the Piedmont region of North Carolina and in certain areas in Virginia. The presence of the disease has greatly reduced the value of infested lands. Infested soil of the Piedmont type rents for less than one third the amount paid for land of the same type free from wilt.

Angular leaf spot or blackfire (*Bacterium angulatum*) caused heavy losses in four counties in Virginia and occurred as a scattered infection in North Carolina.

Frog eye (*Cercospora nicotianae*) occurred in North Carolina and in South Carolina, principally on the upper leaves, and in many instances was so severe as to lower the quality.

Wild fire (*Bacterium tabacum*) occurred generally in plant beds in Maryland and Pennsylvania. It failed to develop in the field in Maryland, but it appeared in most of the fields in Pennsylvania and caused a loss of 15 per cent of the crop there.

(1) Communication from the official correspondent of the Institute, Dr. ROLANDO GUIDOTTI, Chief of the Agricultural Bureau of Eritrea, transmitted by the Government of the Colony.

(2) Communication from Mr. H. A. EDSON, Principal Pathologist in Charge, Plant Disease Survey, Bureau of Plant Industry, United States Department of Agriculture, Washington, to the International Institute of Agriculture.

Mildew or blue mold (*Peronospora* sp.) occurred generally in plant beds from Maryland to Georgia. The attack, however, was mild and the damage as slight.

Black shank (*Phytophthora nicotianae*) spread somewhat in the infested area near Winston-Salem, North Carolina.

Black root rot (*Thielavia basicola*) and Mosaic (virus) occurred in about the usual amounts, while drought spot was less prevalent than usual due to plentiful rains.

Commonwealth of Australia: The Wandering Grasshopper (*Chortoicetes terminifera*) in South Australia (1).

Chortoicetes terminifera, Walk. has been present in plague numbers in South Australia during the last season.

Winged swarms, migrating from northern districts bordering on the pastoral areas, extended over the northern agricultural areas of the State in the autumn of 1934. Hoppers hatched from the egg deposits in the spring months; they occurred in swarms of variable size which became more widely distributed as they advanced to the winged stage. Active steps have been taken by the Department of Agriculture in order to ensure co-ordination of effort in control measures.

India: Plant Diseases Reported in Punjab (2).

Regarding new diseases reported during the year 1934, the following are the important ones:—

(1) *Striga*, a root parasite, was discovered on Bajra (*Pennisetum typhoideum*).

(2) *Cuscuta planiflora* (Dodder) was reported on lucerne. The seed used for growing lucerne was found to contain the seed of the parasite.

(3) A species of *Gloeosporium* was found affecting the leaves and young shoots of mangoes.

Investigations on the following diseases are in progress:—

(1) Gram (Chick pea) blight (*Ascochyta rabiei* = *Phyllosticta rabiei*).

(2) Rice (*Sclerotium oryzae*).

(3) Smuts of cereals.

(4) Gram wilt.

(5) Red Leaf Spot of Jowar or Sorghum.

(1) Communication from the official correspondent of the Institute, Dr. JAMES DAVIDSON, F. I. S., Head of the Department of Entomology, Waite Agricultural Research Institute, Adelaide, South Australia.

(2) Communication from the official correspondent of the Institute, Mr. RAI SAHIB JAI CHAND LUTHRA, M. Sc., D. I. C. (London), I. A. S., Professor of Botany, Punjab Agricultural College, Lyallpur, Punjab, India.

Southern Rhodesia: Locust Invasion, 1932-1934 (I).

Monthly Report No. 24 (November, 1934).

During November, Southern Rhodesia has suffered a phenomenally heavy and almost continuous invasion by great swarms of the Red Locust (*Nomadacris septemfasciata*, Serv.) coming from the north and north west. In many instances these swarms have contained a considerable admixture of the Tropical Migratory Locust (*Locusta migratoria migratorioides*, Rch. & Frm.).

This invasion has been on a larger scale than anything yet experienced during the present swarm cycle. It would seem that the southward pre-breeding migration commenced north of the Zambesi as there was no indication of any general southward movement previous to the arrival of the swarms from the north, some at least of which appear to have passed completely through the Colony into the Union of South Africa. Lack of southward migratory movement during the first part of the month is corroborated by information supplied by the Director of Locust Research at Pretoria, who reported that up to the 19th only two swarms had been reported as having crossed the Limpopo from S. Rhodesia.

The northern stations reported incoming swarms moving south, south-east and east from about the 19th October and by the beginning of November the full tide of the invasion had set in. The whole of the Colony is included in the invasion, but the movement over and through Matabeleland, where there were comparatively few swarms previously, has been phenomenal, thousands of square miles being reported as covered with the swarms. Travellers in one instance report having driven through about 150 miles of locusts almost continuously, this distance being measured across the front of the movement. The depth of the movement from other reports was at least as great. This migration was passing over Bulawayo and the railway line from Figtree to Gwelo for several days around the 10th November, the direction of flight being S. E.

It may be stated that the speed of flight everywhere appears to have been slow but persistent. This was evident from the time which elapsed for the great swarms coming over the Zambesi to reach the occupied area included in the districts of Lomagundi, Mazoe, Salisbury, etc. The infestation of this area was comparatively light up to the third week of the month. Moreover the vanguard of the great movement through Matabeleland had reached at least as far south as West Nicholson in the Gwanda district by the 10th, but as already stated had not been reported across the Limpopo by the 19th, although it has apparently crossed since that date.

At the end of the month every district in the Colony is reported to be heavily infested.

(1) Communication from the official correspondent of the Institute, Mr. RUPERT W. JACK, Chief Entomologist, Department of Agriculture, Salisbury, Southern Rhodesia.

Tropical Migratory Locust:

Whilst no pure swarms of the Tropical Migratory Locust have been reported, it appears that it may have predominated in certain swarms. There are apparently considerably more locusts of this species in the Colony at present than at any time during the present cycle, and it appears that it has penetrated considerably further south than previously at this time of year.

In the Wankie district a correspondent estimates that 10 % of the locusts present belong to this species. In the Urungwe (Lomagundi) district, the proportion is put at 50 %, whilst the Zambesi Valley is reported as « seething » with this species. Other districts where the Tropical Migratory Locust has been reported, in most cases confirmed by specimens forwarded to Salisbury, include Gutu, Chibi, Ndanga, Melsetter, Inyanga, Nyamandhlovu and Salisbury.

Egg-Laying:

Egg-laying was reported in certain districts as early as the 12th of the month, but the first definite record refers to the Lomagundi district on the 24th. By the end of the month several districts reported extensive egg-laying particularly at low altitudes.

It is not possible to state definitely which species has been mainly concerned to date, but from examination of females at Salisbury, it is probable that the Tropical Migratory Locust commenced ovipositing rather before the Red Locust. Egg-laying by the latter species was by no means general at the end of the month, most females showing only partial development, but during the last few days of the month, some females with fully-developed eggs were found, and specimens from one swarm from the Marandellas district indicated that the first packet of eggs must have been laid. Egg-laying by the Red Locust is likely to take place mostly during December. Hoppers of the Tropical Migratory Locust are expected early in the same month.

Damage:

Great damage to early grazing is reported from Matabeleland. In Mashonaland a number of farmers have reported destruction of young maize. There is ample time for replanting, but winged swarms will almost certainly be very prevalent throughout December, and the outlook in the maize belt is decidedly menacing.

Enemies and Disease:

The white-bellied Stork (*Abdimia abdimii*) has been observed in considerable numbers attacking certain swarms of the Red Locust. The White Stork (*Ciconia alba*) has not as yet appeared, and has in fact been scarce in the Colony for several years past. No fungus nor bacterial disease has been found.

A dipterous parasite has been and is very prevalent, and is undoubtedly accounting for very large number of locusts. This parasite was recorded at the same time last year as attacking chiefly the fat bodies in the locusts, and in the case of the females disturbing the ovaries. The muscular tissue was sometimes attacked. This year infestation seems to be mainly in the thorax, the maggots consuming the muscular tissue. The species has not yet been definitely identified even as far as the genus, although its identity is suspected. It is a small fly on the borderline between the Tachinidae and Sarcophagidae. The

larva is usually reported by laymen as having a conspicuous black 'head', the 'head', however, being in reality a highly chitinized prolongation of the anal segment, bearing the posterior spirales.

The capacity for destruction of this parasite appears to be very high. It is the only species so far met with this season, and has been recorded from all over the Colony, a high proportion of specimens submitted, in many instances, being infested. It is to be realised, of course, that parasitised locusts are likely to be more easily caught than healthy ones. The maggot-infested locusts have, however, been reported as falling in numbers from passing swarms and in one locality the ground is reported as brown with the dead locusts.

It is a curious point that up to date these parasites have only been found in *Nomadacris*. None have as yet been found in *Locusta*.

- LEGISLATIVE AND ADMINISTRATIVE MEASURES

Germany (Bremen). — By Decree of 20 November, 1934, relative to the control of wart disease of potatoes [*Synchytrium endobioticum*], it is forbidden, as from the year 1935, to plant in gardens or fields not exceeding 1 000 m² in area, varieties of potatoes other than those officially recognised as being resistant to wart disease. This provision will apply, as from the year 1936, to all cultivations of potatoes. Exceptions may be made, on application, when the variety in question is the exceptionally early 'Erstling' grown for commercial purposes. (*Amtliche Pflanzenschutzbestimmungen*, Berlin, 1. Januar 1935, Bd. VII, Nr. 1, S. 4-5).

Germany (Prussia). — By Decree of 30 October, 1934, the public establishments of seed disinfection existing in the province of Schleswig-Holstein are put under official control. The provisions adopted correspond to those prescribed by the Decree of 4 June, 1934 for Prussian Saxony [see this *Bulletin*, 1934, No. 11, pp. 248-249]. (*Amtliche Pflanzenschutzbestimmungen*, Berlin, 1. Januar 1935, Bd. VII, Nr. 1, S. 9).

Argentine Republic. — The Ministerial Resolution No. 557, dated 27 August, 1934, establishes that certificates of exportation delivered by the Oficina Sanitaria de Importación y Exportación de Plantas y Semillas (Sanitary Office of Imports and Exports of Plants and Seeds), will only be valid for ten days from the date of issue. (*Boletín Oficial de la República Argentina*, Buenos Aires, 20 de noviembre de 1934, año XLII, núm. 12.131, pág. 729).

* * By 'Acuerdo de Ministros' No. 48.945-1175, dated 21 September, 1934, the Direction General of 'Yacimientos Petrolíferos Fiscales' is authorised to deliver 100 000 litres of crude oil 'Curafrutal' to the Ministry of Agriculture for the purpose of preparing emulsions for the treatment of fruit trees. (*Ibid.* 3 de diciembre de 1934, núm. 12.142, pág. 73).

* * The Law No. 11.905 of 22 September, 1934 authorises the Government to reserve the sum of two millions of 'pesos' of public funds for the control of the South American locust [*Schistocerca paranensis*]. (*Ibid.*, 12 de diciembre de 1934, núm. 12.149, pág. 386).

Austria (Vorarlberg). — The Law No. 8 of 13 December, 1933, relating to plant protection, regulates the points left open by the Federal Law No. 252 of 12 July, 1929 [see this *Bulletin*, 1930, No. 2, pp. 25-27] for the legislation of autonomous provinces ('Länder').

With regard to the control of plant diseases and pests, the communes should conform to the instructions which will be given to them by the higher authority. For this purpose they should, if necessary, engage additional staff. The communes should also bear the expenses entailed by the control in common. They may reimburse themselves by distributing the costs among persons interested. In the case where a person does not carry out the measures required of him, the mayor may have the work carried out at the expense of that person. If a commune does not fulfil its obligations the higher authority may execute the work at the expense of the commune interested.

The political authority is authorised to take the necessary samples with a view to phytosanitary inspection. The competent experts of the Chamber of Agriculture of Vorarlberg, of the Federal Station for plant protection at Vienna, of the Federal Station of plant cultivation and seed control at Vienna, of the establishment for education and investigation in fruit growing, viticulture and horticulture at Klosterneuburg, also the Station for chemical investigation at Bregenz have the same right.

When the presence of a disease or pest has been established, the Government of the province can prescribe the necessary measures of control and disinfection. It can stipulate that plants and vegetable products, also packing material in the places infested, should be destroyed or used in a manner which will not result in any danger of the injurious agent being propagated. It can also declare the locality in question to be infested and prescribe a quarantine.

If the nature of a disease or pest renders the measure necessary, the Government of the province is authorised to prescribe that the control should be carried out in common by all owners or all communes interested. The experts of the Service for plant protection may be charged with the direction of the control in common. As to the execution of the work, it may be confided to an organisation competent to carry out this work.

It is made compulsory to report the appearance of all diseases and pests considered particularly injurious, such as San José scale [*Aspidiotus perniciosus*]. The list of diseases and pests the presence of which should be reported will be published.

The Government of the province can oblige the communes to encourage the destruction of certain pests by awarding a bonus.

The use of certain methods of control, disinfection of seeds in particular, may be made compulsory.

Nurseries and undertakings for multiplying seeds should be subject to regular supervision. This should be carried out at least once a year by the

Experiment Station of Agricultural Chemistry of Bregenz, by the Chamber of Agriculture of Vorarlberg and by the institutes of agricultural education.

In collaboration with the Chamber of Agriculture of Vorarlberg and taking as a basis the official communications and observations, the Government of the province will establish each year the statistics of diseases and pests of plants and of the damage caused. The results will be communicated to the Federal Station for Plant Protection at Vienna.

The Government of the province can subsidise the expenditure incurred in the execution of this Law. These subsidies will be used particularly for the purchase of means of control and seeds of resistant varieties, also for recompensing persons who have made interesting observations or reported the appearance of serious diseases or pests, etc. (*Vorarlberger Landesgesetzblatt*, Bregenz, 27. Februar 1934, Jahrg. 1934, 4. Stück, S. 9-15).

Gold Coast. — The Fruit Industry (Bananas) Regulations, 1934, of 18 September, 1934, state, *inter alia*, that bananas intended for export should be free from diseases. (*Deutsches Handels-Archiv*, Berlin, 15. Dezember 1934, 88. Jahrg., 2. Dezemberheft, S. 4253-4254).

Egypt (1). — The entrance into Egypt of the following insect pests, bacterial, fungus and other diseases is prohibited:—

Hosts.	Pests and Diseases Prohibited.
Citrus fruits.	<i>Argyroplote leucotreta</i> (False Codling Moth). <i>Ceratitis capitata</i> (Mediterranean Fruit Fly). Scale Insects. <i>Phytophthora citri</i> (Citrus Canker). <i>Phyt. citripustulosa</i> (Citrus Blast, Citrus Black Pit).
Apples, pears, quinces, peaches, plums, apricots, cherries, loquats.	<i>Anthonomus</i> spp. <i>Rhynchites</i> spp. <i>Carpocapsa pomonella</i> (Codling Moth). <i>Grapholita funebrana</i> . <i>Ceratitis capitata</i> . <i>Laspeyresia molesta</i> (Oriental Peach Moth). <i>Anarsia lineatella</i> (Peach Twig Borer). <i>Heterodera radicola</i> (Knot-Root). <i>Bacterium tumefaciens</i> (Crown Gall).
Green almonds, green nuts, chestnuts.	<i>Eurytoma amygdali</i> .

(1) From a communication addressed to the International Institute of Agriculture by the Royal Legation of Egypt, Rome.

Hosts.	Pests and Diseases Prohibited.
Potatoes.	<i>Leptinotarsa decemlineata</i> (Colorado Beetle). <i>Epitrix cucumeris</i> (Potato Flea Beetle). <i>Phthorimaea operculella</i> (Potato Tuber Moth). <i>Synchytrium endobioticum</i> (Wart Disease). <i>Spongospora subterranea</i> (Powdery Scab). <i>Actinomyces scabies</i> (Common Scab).
Grapes.	<i>Phylloxera vastatrix</i> (Grape Phylloxera). <i>Polychrosis botrana</i> (Vine Moth). <i>Clysia ambiguella</i> (Vine Moth). <i>Heterodera radicumicola</i> .
Figs.	<i>Ceratitis capitata</i> . <i>Trioza buxtoni</i> . <i>Lonchaea aristella</i> .
Water-melons, melons, cucumbers and all other cucurbits.	<i>Dacus</i> sp. <i>Myopardalis pardalina</i> . <i>Lonchaea aurea</i> .
Mangoes.	<i>Cryptorrhynchus mangiferae</i> (Mango Weevil). <i>Dacus</i> sp.
Banana plants and fruits.	<i>Cosmopolites sordidus</i> (Banana Weevil). <i>Aspidiotus</i> spp. <i>Pseudococcus</i> spp. <i>Icerya seychellarum</i> .
Olives or olive trees.	<i>Dacus oleae</i> (Olive Fly). Stem Borers or any other injurious insects. <i>Bacterium tumefaciens</i> .
Palms.	<i>Oryctes elegans</i> . <i>Phoenixcoccus marlatti</i> . <i>Heterodera radicumicola</i> .
Sugar-cane (only postal parcels are allowed).	<i>Heterodera radicumicola</i> .
Bulbs and onions.	<i>Merodon equestris</i> (Larger Bulb Fly). <i>Eumerus strigatus</i> (Lesser Bulb Fly). <i>Urocystis cepulae</i> (Onion Smut).
Plants in pot or with soil round the roots.	<i>Iridomyrmex humilis</i> (Argentine Ant). <i>Popillia japonica</i> (Japanese Beetle). <i>Capnodis carbonaria</i> . <i>Chalcophora stigmatica</i> .

Hosts.

Pest and Diseases
Prohibited.

Plants and parts of plants.

Aspidiotus perniciosus (San José Scale).
Asp. [Chrysomphalus] personatus.
Epidiaspis pyricola.
Aulacaspis pentagona (Mulberry Scale).
Orthezia insignis.
Chionaspis euonymi.

Pomegranates.

Pseudococcus spp.

Spain. — By 'Orden' of 22 December, 1934, the delivery of phytopathological certificates of origin for agricultural products subject to exportation quotas, and especially fruits and vegetables destined for France, will only take place on application of persons interested to the Chief Engineer of the Agronomical Section of the province. Approval being given by the said Section, if the petitioners are included among those authorised to export, the Agronomical Engineer officially authorised by the National Phytopathological Service will deliver the corresponding certificate of origin according to the result of the inspection or the phytosanitary condition of the place of origin.

The certificate will be issued in duplicate, one of which will be forwarded directly by the Engineer to the Agronomical Engineer of the National Phytopathological Service who is authorised to carry out the Customs inspection, after which, he will issue the corresponding phytosanitary certificate necessary for the expedition of merchandise and for its admission into the country of destination. The model phytosanitary certificate of export will be in accordance with that established by international Conventions or the exigencies of the country of destination.

The Customs will only despatch consignments which are accompanied by a phytosanitary certificate of export issued by the authorised Agronomical Engineer of the National Phytopathological Service. (*Gaceta de Madrid*, Madrid, 26 diciembre 1934, año CCLXXIII, tomo IV, núm. 360, págs. 2451 y 2452).

Guatemala. — By Decree No. 1576 of 10 September, 1934, nicotine, its salts and compounds are declared free from import duties if intended for insecticide purposes. (*Diario de Centro América*, Guatemala, 11 de septiembre de 1934, tomo XI, núm. 59, pág. 390).

Italy. — By Ministerial Decree of 24 November, 1934, according to the Law No. 987 of 18 June, 1931 on measures for the protection of cultivated plants and agricultural products against adverse causes also for the organisation of relative services [see this *Bulletin*, 1931, No. 9, p. 166], an obligatory Syndicate for improving and developing olive-growing has been constituted in the province of Agrigento.

The annual contribution payable by each member of the Syndicate cannot exceed 10 centesimi per olive tree in bearing. (*Bollettino Ufficiale del Ministero dell'Agricoltura e delle Foreste*, Roma, 11 dicembre 1934, anno VI, n. 29, pp. 5406-5407).

* * By Ministerial Decree of 30 November, 1934, according to the Royal Decree-Law No. 1754 of 12 August, 1927, containing provisions for the development of olive-growing and the Law No. 987 of 18 June, 1931, an obligatory Syndicate for improving and developing olive-growing has been constituted in the province of Ragusa.

The contribution payable by members of the Syndicate cannot exceed 10 centesimi per olive tree in bearing. (*Ibid.*, 21 dicembre 1934, n. 30, pp. 5599-5600).

* * By Ministerial Decree of 14 December, 1934, according to the Royal Decree-Law No. 1754 of 12 August, 1927, also the Law No. 987 of 18 June, 1931, an obligatory Syndicate for improving and developing olive-growing has been constituted in the province of Pescara.

The contribution payable by members of the Syndicate cannot exceed 10 centesimi per olive tree in bearing. (*Ibid.*, 1^o gennaio 1935, anno VII, n. 1, pp. 32-33).

* * By Ministerial Decree of 22 December, 1934, the National Federation of Provincial Syndicates for the protection of the cultivation of hemp has been legally recognised. The said Syndicates have in view, *inter alia*, the organisation of the control of diseases of hemp. (*Ibid.*, 1^o febbraio 1935, n. 4, pp. 436-347).

* * By Ministerial Decree of 21 January, 1935, approval has been given to the Statutes of the National Federation of Provincial Syndicates for the protection of the cultivation of hemp. (*Ibid.*, pp. 458-468).

Japan. — By Decree No. 21 of 24 October, 1933, relative to the application of Law No. 11 of 25 March, 1914, regulating the control of imports of plants with a view to preventing the introduction of Hessian fly [*Mayetiola destructor*], it is forbidden to import straw, including straw for packing, straw mats, etc., coming from the following countries: Russian Asia, Asia Minor, Persia, Europe, Canada, the United States of America, and New Zealand. (*Deutsches Handels-Archiv*, Berlin, 1. Dezember 1934, 88. Jahrg., 1. Dezemberheft, S. 4178).

Luxemburg (Grand Duchy of). — By Decree of 20 October, 1934, the importation of plants and shrubs, green-house and out-of-doors, into the Grand Duchy is subject to the production of a special authorisation delivered in the name of the Minister of State and President of Government. (*Mémorial du Grand-Duché de Luxembourg*, Luxembourg, 22 octobre 1934, n^o 60, p. 981).

Morocco (French Zone). — By Decree of the Director of Waters and Forests, dated 12 November, 1934, owners of lands situated in the territory of the bureaux of local affairs of Kelâa-des-Slès and Tafrant, district of Fez are authorised to destroy wild boars on their lands, at all times and by all means except by fire. (Empire Chérifien. Protectorat de la République Française au Maroc. *Bulletin Officiel*, Rabat, 23 novembre 1934, XXIII^e année, n^o 1152, p. 1185).

** By Decree of the same Director, dated 22 November, 1934, owners of lands situated in certain zones within the radius of the civil control of the Zemmour are authorised to destroy wild boars which cause damage to their lands at all times and by all means except by fire. (*Ibid.*, 30 novembre 1934, n° 1153, p. 1204).

** By Decree of the Director General of Agriculture, Commerce and Colonisation, dated 23 November, 1934, paragraph 5 of article 1 of the Decree of 19 February, 1931 relative to the application of sanitary formalities to certain products of vegetable origin on their entry into the French zone of the Sherifian Empire [see this *Bulletin*, 1931, No. 4, p. 60] is completed thus:—

(5) ...the hop 'cones' (female inflorescences of *Humulus lupulus* L. and *H. japonicus* Sieb. and Zucc.), henna (dried leaves and stalks of *Lawsonia alba* Lam.).

Paragraph 9 of article 1 of the same Decree is modified as follows:—

(9) The products enumerated in paragraph 5 of the said article with the exception of dried fruits and rice straw.

Article 1 of the same Decree is completed by a paragraph 10 thus:—

(10) Peat. (*Ibid.*).

Mexico. — By 'Cuarentena interior' No. 2 for the defence zone of North East Mexico, dated 31 May, 1934, rules are laid down for preventing the introduction into the said zone — constituted by the States of Nayarit, Sinaloa, Sonora and the Territory of Lower California — of pests such as pink bollworm of cotton (*Pectinophora gossypiella*), potato borer (*Epicaerus cognatus*), potato tuber moth (*Phthorimaea operculella*), grape phylloxera (*Phylloxera vitifoliae*), the banana weevils (*Cosmopolites sordidus* and *Cactophagus validirostris*), the 'barrenadores del hueso y del tronco del aguacate' (*Heilipus lauri* and *Copturus* sp.), sisal weevil (*Scyphophorus acupunctatus*), fruit flies (*Anastrepha ludens*, *A. striata*, *A. serpentina* and *A. fraterculus*), and diseases such as Panama disease of bananas [*Fusarium cubense*]. (*Diario Oficial*, México, 22 de noviembre de 1934, tomo LXXXVII, núm. 18, págs. 433 a 440).

** The 'Acuerdo' of 10 April, 1934 regulates the control of fruit flies (*Anastrepha* spp.). (*Ibid.*, 9 de agosto de 1934, tomo LXXXV, núm. 34, págs. 677 a 679).

** The Decree of 8 June, 1934, establishes conditions of production and sale of all substances or mixtures of substances intended for commercial use as preventives, repellants, mitigators, or destroyers of all insects, fungi, bacteria, weeds, rodents or other animal or vegetable pests prejudicial to plants and animals. (*Ibid.*, 2 de agosto de 1934, tomo LXXXV, núm. 28, págs. 547 a 549).

** By 'Cuarentena interior' No. 3 of 25 June, 1934, regulations are made for preventing the spreading or propagation of the potato borer and potato tuber moth. (*Ibid.*, 4 de octubre de 1934, tomo LXXXVI, núm. 21, págs. 467 a 471, 1 mapa).

* * The 'Acuerdo' of 2 July, 1934 establishes the 'Cuarentena exterior' No. 12, for preventing the introduction and propagation of the alfalfa weevil (*Phytonomus* [*Hypera*] *posticus*). (*Ibid.*, 8 de agosto de 1934, tomo LXXXV, núm. 33, págs. 663 y 664).

Netherlands (The). — The Royal Decree No. 12 of 28 August, 1934, prolongs the temporary restrictions on the importation of ornamental non-woody plants, also *Azalea indica* (*Rhododendron indicum*) and common hydrangea (*Hydrangea hortensia*). (*Nederlandsche Staatscourant*, 's Gravenhage, 30 Augustus 1934, n.º 167, bladz. 1).

* * The Royal Decree No. 532 of 5 October, 1934, contains measures for the control of the Colorado beetle (*Leptinotarsa decemlineata*). (*Staatsblad van het Koninkrijk der Nederlanden*, 1934, n.º 532, blz. 1-4).

Peru. — The Resolution of 29 May, 1934, regulates the delivery of certificates of exportation for containers by the Customs of the Republic. (*El Peruano*, Lima, 7 de noviembre de 1934, año 94, tomo II, trimestre IV, núm. 246, pág. 977).

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Discursos de apertura pronunciados por el Presidente de la Sociedad Entomológica Argentina, don Adolfo Breyer (hijo), el 22 de diciembre de 1933 y el 13 de enero de 1934.
Introducción.
La lucha contra la langosta. Algunas reflexiones sobre su organización en la República Argentina, por F. Lahille.
Organización de los estudios acrídicos en el mundo, por José Liebermann.
Primera parte.
La lucha biológica. Definiciones, Historia. Conceptos modernos. Su aplicación práctica en la lucha contra la langosta, por Everard E. Blanchard.
Los hongos parásitos de la langosta en la República Argentina, por Juan B. Marchionatto.
Acerca de la utilización del microbio de d'Hérèlle (*Coccobacillus acridiorum*), en la lucha contra la langosta del país, por Santiago S. Quiroga.
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Observaciones biológicas realizadas en el período invernal de 1933:

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[In this first part of the first volume of his work the distinguished director of the R. Laboratorio d'Entomologia agraria at the R. Istituto Superiore Agrario di Portici, describes in detail, from the systematic and biological view point, the majority of insects native to Italy, also some foreign ones, belonging to the sub-class of Apterygota (orders of Protura, Collembola, Diplura and Thysanura) and to those of Pterygota (orders of Grylloblattoidea, Blattoidea, Isoptera, Mantodea, Phasmoidea, Orthoptera, Embioptera, Zoraptera, Dermaptera, Perlaria, Odonata, Ephemeroptera, Corrodentia, Mallophaga, Thysanoptera and Hemiptera). Of the families of Homoptera, second sub-order of Hemiptera, the Author studies here the following: Cicadidae, Cercopidae, Membracidae, Cicadellidae, Fulgoridae, Psyllidae, Aleyrodidae and Aphididae (in part, only).

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[This ichthyotoxic plant, very common in the Belgian Congo, has a great insecticide power resembling that of nicotine on Aphididae and other soft skinned insects; preparations extracted from leaves or seeds of this leguminous plant are capable of giving the colonial farmer an active and economical insecticide. It is even possible that the seeds or extracts of the leaves may provide an insecticide with a commercial value equal to that of nicotine].
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NOTES

Plant Quarantine Stations in the British Empire. — Two quarantine stations through which each consignment of living plants and plant products, destined to be used for propagation purposes must first pass, have been established recently in the British Empire, namely, one at the Imperial College of Tropical Agriculture, Trinidad, B. W. I., and the other at the Amani Research Institute in Tanganyika. The Station in Trinidad serves the British West Indies and other British colonies in the Caribbean area while the Station at Amani will function for the colonies and mandated territory of East Africa.

Southern African Locust Bureau. — It has been decided to establish a bureau of locust information to be known as the Southern African Locust Bureau and, for the present, centralised in Pretoria. Its main functions are to secure, collate, co-ordinate and disseminate information on locusts for the benefit of the co-operating states and territories, *i. e.* Kenya, Uganda, Tanganyika, Nyasaland, Northern Rhodesia, Southern Rhodesia, Belgian Congo, Portuguese East Africa, Angola, Bechuanaland, Basutoland, Swaziland, South-West Africa and the Union of South Africa. The Bureau will work in close collaboration with the Imperial Institute of Entomology, London.

INTERNATIONAL BULLETIN

OF PLANT PROTECTION

DISCOVERIES AND CURRENT EVENTS *

Algeria: Invasion of the Desert Locust in 1934 (1).

It was reported for the first time on 8 October, 1933, in the region of Ouallen that the Desert Locust (*Schistocerca gregaria*) was invading Touat where a very large swarm flew over Reggan on 22 October and afterwards Gouara where they settled in small numbers at Timimoun on 25 October.

From the beginning of November the posts of Beni-Abbès, El-Goléa and Ouargla reported the arrival of locusts generally in dense swarms and chiefly in the region of El-Goléa. Their progress continuing, the locusts reached Touggourt where a large number settled on the 16th, also at Beni-Ounif where a swarm passed over on the 17th and continued towards the N. W. The region of Aïn-Sefra was attacked on the 22nd.

The locust activity decreased considerably during the month of December though some swarms arrived at Laghouat and Touggourt.

The month of January, 1934 marked a slight recrudescence of the invasion which has aroused fears of an invasion of Tell in the following spring.

A very large swarm, 20 kilometres long, passed the cuvette of Fort Lallemand on 6 January, flying towards the N. and consequently some settlements were reported, from the 13th, in the regions of Ghardaïa, Aïn-Sefra and El-Oued. This drive towards the North by the majority of the swarms was of short duration and displacements are of little importance during the month of February.

In March reports increased, but the swarms did not progress towards the North. They settled chiefly in the regions of Ghardaïa and Aïn-Sefra.

The change in colour announced the approach of maturity; copulation was frequent and the first layings took place from 4 to 8 March at about 60 kilometres South-West of Ghardaïa, then about the 15th in the annex of Aïn-Sefra, where they continued, chiefly in the surroundings of Moghrar Foukani and Moghrar Tahtani.

The invasion only increased a little during the month of April. A fair number of medium sized swarms circulated in the annex of Aïn-Sefra where laying took place over a small surface. Some reached the annex of Géryville during the course of the first fortnight of the month, which is also slightly infested.

* Under this and the third heading the countries are arranged in French alphabetical order.

(1) Communication from the official correspondent of the Institute, Mr. M. DELASSUS, Inspector, Chief of the Crop Protection Service and Phytopathological Inspection, Government General of Algeria, Algiers.

In the South of the department of Algiers some swarms reached the annex of Djelfa on 19 April, in the district of Messad, but only very small layings took place. The annex of Laghouat was more severely infested at the end of the month when numerous swarms were reported, on 23 and 24 April and 3 May, as laying near the oasis, also at El-Haouita over a total area of about 250 hectares.

On the other hand, in the South of Constantine Department, the locusts, which had again gone up the Oued Rhir at the beginning of the month as far as the latitude of Ourir and had even laid to a very slight extent near Ouled Djellal on 19 April, completely disappeared.

On 30 April, on which day some isolated adults were collected at the douars Kef Lakhdar and Tirghane, mixed commune of Aïn-Boucif, the maximum extent of the invasion was reached. Swarms and laying were subsequently rare and have not been reported except in the annexes of Laghouat and of Aïn-Sefra.

Hatchings began on 11 April in the South of Ghardaïa and on the 21st in the district of the two Mogharrar at Aïn-Sefra, though not reported until a month later in the annex of Laghouat. The larval bands which resulted were only of importance in the annex of Aïn-Sefra, and, on a smaller scale, in the annex of Laghouat. An energetic control of the hoppers resulted in a very rapid and complete destruction and the campaign finished on 16 June on which day the last hatchings took place at Géryville.

The very rare swarms of the second generation certainly came from a few larval bands which had developed in the totally desert regions of the extreme South. Their very early appearance seems to confirm this hypothesis as they were reported on 21 and 27 April in the districts of the two Moghar at which time the eggs deposited in this country had hardly begun to hatch out.

Subsequently, they were only rarely reported and always in the South of Oran Département. The last settled on 2 July at Aïn-Sefra and then disappeared, putting an end to an invasion which was of small density and entirely localised.

Angola : Locust Control (1).

The following is a summary of the locust control carried out in the Colony during the months of May to August, 1934.

Destruction of the eggs has taken place throughout the whole Colony, including the frontier regions. More than a hundred tons of egg-pods have been bought from natives and Europeans. This operation will, however, be continued and as the credit of 869 'contos' (about 9 000 pounds) is already exhausted, further credits will be granted for intensifying the control of the egg. destruction tiated with good results.

For the control of hoppers there will be required 15 tons of sodium arsenite, 500 pumps and 10 000 sheets of galvanised iron, in addition to the material left over from last years' campaign.

(1) Communication from Mr. JORGE DE BARROS RODRIGUES QUEIROZ, Agronomical Engineer, attached to the Locust Control Services, Luanda, Angola.

The Government of the Colony is prepared to make the greatest sacrifices, even greater than its own financial resources, to reduce as much as possible the infestation of egg-pods and hoppers which will be enormous this year, in the hopes that the neighbouring States will adopt the same methods in order that our efforts will not be rendered useless.

Argentine Republic: Yellow Rust in the Wheat-Growing Region. Behaviour of the Cultivated Varieties vis-à-vis the Disease (1).

The ' Dirección de Defensa Agrícola y Sanidad Vegetal ', through the Phytopathological Division of the Ministry of Agriculture, has carried out a new study on yellow rust (*Puccinia glumarum tritici*) in order to again ascertain the region most affected and the behaviour of the various varieties of wheat.

The first appearance of yellow rust in 1934 in the cereal growing region was ascertained by the above-mentioned Division, on specimens of wheat from Pergamino, Buenos Aires. On the other hand in the wheats grown around Buenos Aires, the appearance was noticed at the beginning of the second half of the month of September.

To obtain an idea of the diffusion of yellow rust in the cereal region and the behaviour of the various varieties of wheat, studies were made of 353 specimens coming from different places, sent by the ' agrónomos regionales ' and experts of the ' Dirección de Defensa Agrícola y Sanidad Vegetal ', and especially selected where signs of the appearance of yellow rust were noticed. Of these specimens, 182 came from Córdoba, 128 from Buenos Aires, 27 from Santa Fé, 10 from Entre Ríos, 2 from La Pampa, 3 from San Luis and 1 from Santiago del Estero.

The degree of the attack was determined in the same way as in previous years, adopting the graduated scale from 1 to 5, in which 1 signifies wheat some what resistant with pustules on the central and lower leaves, and 5 signifies wheat much affected with pustules on the upper leaves and ears.

The figures obtained from the study of the various varieties were as follows:—

Record	5
Barletta	5
San Martín	5
Klein 40	5
38 M. A.	5
Gral Urquiza	5
Lin Calel	3-4
Klein 32	3-4
Vencedor	3-4
Triunfo	3-4
Kanred	3-4
Favorito	2-3
13 T	2-3
Klein 31	1-2
Ardito	0-1

(1) Communication from the official correspondent of the Institute, Mr. JUAN B. MARCHIONATTO, Ingeniero Agrónomo, Director of the Defensa Agrícola y Sanidad Vegetal, Ministry of Agriculture, Buenos Aires.

Comparing this table with that of previous years, it was seen that there was a tendency in the different varieties to increase their susceptibility to attacks by the parasite: the wheat 38 M. A. which was shown as 4, this year is shown as 5, the most serious attacks having been ascertained on specimens from the province of Córdoba. The variety Ardito, discarded by the Ministry of Agriculture for its low baking value, was the only one resistant to the attack, all the other varieties had been attacked to a greater or lesser degree.

Moreover, as a result of these studies, it was possible to ascertain that the greatest diffusion of yellow rust was always localised in the central cereal growing region (north-east and north of the province of Buenos Aires, centre and south of Santa Fé and centre and south of Córdoba).

Eritrea: Locusts (1).

During the month of February, 1935, no locusts have been reported in any part of the Colony.

United States of America: Bacterial Wilt of Maize (2).

Bacterial wilt of corn, *Zea mays*, familiarly known as Stewart's disease, *Aplanobacter stewartii*, which for several seasons has been increasingly prevalent both in incidence and in range northward, appears to have reached its climax in 1932 and 1933, and to have suddenly dropped to something like normal occurrence and distribution in 1934. In search of an explanation of this fluctuation in the behavior of the disease, Dr. Neil E. Stevens has gathered together and analyzed the available fragmentary facts regarding previous outbreaks and disappearances of bacterial wilt. His studies suggest that, 'An interesting and perhaps significant correlation appears to exist between winter temperatures and the abundance of the disease during the following summer'. Designating the sum of the monthly mean temperatures for December, January, and February computed in degrees Fahrenheit as the temperature index of the corresponding winter, he points out that, so far as the facts are available, they support the hypothesis that Stewart's disease will usually be present in a given locality in the north eastern United States following a winter with an index for that locality below 90 and present in destructive amounts following a winter with an index above 100, with intermediate conditions following winters with indexes between 90 and 100.

Aplanobacter stewartii is known to survive the winter to a limited extent in infected seed but evidence is lacking that it survives in infested soil. Char-

(1) Communication from the official correspondent of the Institute, Dr. ROLANDO GUIDOTTI, Chief of the Agricultural Bureau of Eritrea, transmitted by the Government of the Colony.

(2) Communication from Mr. H. A. Edson, Principal Pathologist in Charge, Plant Disease Survey, Bureau of Plant Industry, United States Department of Agriculture, Washington, to the International Institute of Agriculture.

lotte Elliott and F. W. Poos have just reported results of studies showing that the flea beetle, *Chaetocnema pulicaria* Melsh., is capable of transmitting Stewart's disease from infected to healthy corn plants and that overwintered adults of the insect harbour *Aplanobacter stewarti* in an infective condition. The flea beetles commonly feed on young corn plants on emerging from hibernation.

More complete information regarding *Chaetocnema pulicaria* and the phenological factor which influence its distribution is of exceeding interest.

India: Damage done by Frost in Winter 1934 to Crops and Fruit Plants in Punjab Plains (1).

There was severe cold in January, 1934 from 5th to 24th. Altogether there was frost for 18 nights and was continuous for several days. On the 20th and 21st January there was very heavy frost. The temperature went down to 27° F.

Wheat and Barley. Leaves of plants had turned yellow. As ears are produced in January and are still in sheath, they become liable to injury by frost. On the emergence of heads in March, it was noticed that in several cases, ears had turned white and were barren.

Oilseed Crops.

Toria, etc., (Rapes):— They had escaped damage, as fruit had set in most cases. All the same there was damage upto the extent of 10 per cent.

Linseed:— No damage was done to this crop.

Castor:— This suffered most. Leaves had dried up and growth of shoots had stopped. Flowering bunches were destroyed, and no seed was formed. Damage was as much as 50 per cent.

Gram (Chick pea). In many parts of the province, gram had suffered greatly. The shoots had withered and all the early flowers were killed. Growth had stopped altogether. Damage may be put down at about 10-20 per cent. in various fields. The crop, however, recovered to some extent in February.

Fodder Crops.

Berseem (Egyptian clover):— Young Berseem was altogether destroyed. Early sown crop had not suffered so much.

Oats:— Oats had turned red and dried up in many cases, particularly on poor soils.

Grasses:— Elephant grass, Guinea and other pasture grasses had also suffered a good deal.

(1) Communication from the official correspondent of the Institute, Mr. RAI SAHIB JAI CHAND LUTHRA, M. Sc., D. I. C. (London), I. A. S., Professor of Botany, Punjab Agricultural College, Lyallpur, Punjab, India.

Sugarcane. In many fields which were dry, leaves had dried up and buds were killed. The extent of damage to buds varied a good deal in different places from 20 to 70 per cent. Canes were left deficient in juice and quality was spoiled.

Fruits.

Citrus plants:— Lemon and grape fruit plants had suffered most.

Guavas:— Plants as much as 5-6 years old had their leaves and young shoots completely dried up.

Mangoes:— Although protected by covers against frost, young shoots which were in blossom and bearing fruits were destroyed. The mango crop was very poor all over the Punjab.

Bananas:— This plant is usually very susceptible to cold and during the year it had entirely dried up. Plants, however, sprouted again in spring.

Cold air wave precipitating into frost had caused damage to the plants above the ground level as well as near the ground. Sugarcane and fruit plants which were 4 feet high or even more were also injured. Low crops like Berseem had suffered greatly. Likewise, wheat and barley which were 1 to 1 ½ feet high in January were damaged.

Southern Rhodesia: Locust Invasion, 1932-1934 (1).

Monthly Report No. 25. December, 1934.

During December egg-laying by the Red Locust (*Nomadacris septemfasciata*, Serv.) has been reported in most districts of the Colony, and by the end of month hoppers had been reported from fourteen districts.

All specimens of eggs and hoppers forwarded to Salisbury have been of the Red species. If the invasions by the Tropical Migratory Locust (*Locusta migratoria migratorioides*, Rch. & Frm.) were as great as indicated by reports and specimens submitted, it would seem that this species has not been very successful in respect to breeding this season, as the hoppers should have hatched out well in advance of those of the Red Locust and attracted earlier attention.

Enemies and Disease.

The invading locusts have suffered greatly from the ravages of parasites and particularly the fungus disease (*Empusa grylli*) which has apparently been favoured by the wet weather. There can be no doubt that the position has been greatly alleviated by these agencies and it is not impossible that what threatened to be

(1) Communication from the official correspondent of the Institute, Mr. RUPERT W. JACK, F. E. S., Chief Entomologist, Department of Agriculture, Salisbury, Southern Rhodesia.

an overwhelming outbreak of hoppers may prove to be comparatively light. The position will, however, become clearer in the course of the next few weeks.

The White-bellied Stork (*Abdimia abdimii*) has been much in evidence attacking the locusts, at least in Mashonaland, whilst flocks of the White Stork (*Ciconia alba*) have been reported in one or two localities.

The usual enemies and parasites of eggs have been recorded, including *Stomatorrhina lunata*, Cantharid beetles, etc.

Damage.

A considerable amount of young maize has been damaged in the maize growing districts, but has mostly either been re-planted or is reported to be recovering. Widespread damage to grazing is reported in Matabeleland. This damage has, of course, been inflicted by winged swarms.

Outlook.

The outlook is still somewhat obscure due to uncertainty as to the amount of eggs deposited before the majority of the swarms succumbed to parasites and disease. An element of uncertainty is also produced by the presence of scattered locusts in many parts, which may be more general than is known at present. Present indications are, however, to the effect that the prospect has greatly improved during the month.

VARIOUS QUESTIONS

Convention between American Countries for Locust Control.

Under the auspices of the Government of the Republic of Uruguay an International Conference of experts was held at Montevideo from 10 to 13 December, 1934, for the study of up-to-date methods of locust control.

The Governments represented at the Conference were those of: the Argentine Republic, Brazil, Salvador, Nicaragua, Guatemala, Mexico, Paraguay, and Uruguay.

At the conclusion of the discussions the plenipotentiaries of the above mentioned countries signed, on 13 December, the following Convention in a single copy deposited at the Ministry of Foreign Affairs of Uruguay.

Article 1. — The contracting Governments engage to establish within their respective countries, the technical services necessary for studying the locust problem.

Article 2. — These services will include:—

(a) the establishment of an institute or section intended exclusively for carrying out investigations on the locusts;

(b) the organisation of a system of information to report on the movement of swarms;

(c) the obligation to control the invasions of locusts in spring and summer by means of the most efficacious measures.

Article 3. — A continuous study of the locusts is considered indispensable by means of scientific investigations which will be carried out for an uninterrupted period during a complete life-cycle of the insect, and for which results obtained up to the present will be taken as a basis.

Article 4. — The scheme for investigation, especially in the north of the Argentine Republic and neighbouring countries, referred to in Art. 3 will be proposed by the Argentine authorities and submitted for consideration to the Governments signatories to this Convention.

The studies which will be undertaken will be principally directed towards determining the areas in which locusts are found during the autumn and winter months and to applying the most feasible and efficacious means of control in such seasons.

Article 5. — In order to unify and direct the Pan-American studies of locusts a Permanent, Pan-American, Technical Commission will be established for locust investigations with head-quarter at Buenos Aires and in which the contracting countries will be represented.

Article 6. — The Commission referred to in Art. 5, in order to carry out its function with the greatest efficiency, will be placed in direct communication with the institutions or technical officers of the contracting countries.

Article 7. — Each year an international meeting of the countries interested will take place in a city to be decided upon by the Permanent Commission, at which the studies undertaken and the results obtained will be made known and the plan of campaign to be put into practice the following year will be decided upon.

Article 8. — An official publication will make known the investigations undertaken in each of the contracting countries and will contain a brief summary of the locust control in the other countries.

Article 9. — The funds required for the functioning of the Permanent Commission, for studies and publications, will be provided by contributions from the contracting countries in the form and proportion considered most suitable to their interests. This will be proposed at the first annual international meeting referred to in Art. 7.

Article 10. — Until the Permanent Commission is established the Argentine Government will engage to facilitate the execution of the work established in the present Convention, through the present Central Commission for locust investigations at Buenos Aires which will collect all information concerning the locust problem and interchange the said information with the technical offices of the adhering countries.

Article 11. — Other countries in America which have not signed the present Convention will be allowed to adhere to it on request.

Their adherence will be notified through diplomatic channels to the Government of Argentine Republic which will notify the other contracting countries.

Article 12. — The present Convention will be ratified and the ratifications deposited at the Ministry of Foreign Affairs of the Argentine Republic in the shortest possible space of time.

It will come into force in as much as it is promulgated in conformity with the legislation of the contracting countries.

LEGISLATIVE AND ADMINISTRATIVE MEASURES

Germany. — By Decree of 10 October, 1934, the provisions of 26 February, 1932 concerning the use of ethylene oxide have been modified.

Places where disinfection has been carried out with the aid of ethylene oxide should be aired for at least 6 hours. Afterwards, all doors and windows should be shut and, in places provided with heating apparatus, the temperature brought up to at least 15°C. After one hour the operator should establish, by the official method, whether the last traces of poisonous gas have disappeared. Places disinfected cannot be used again until after this examination, carefully carried out, has shown that traces of poisonous gas remaining in these places, including cushions, beds, etc do not exceed 0.5 mg per litre. (*Amtliche Pflanzenschutzbestimmungen*, Berlin, 1. Februar 1935, Bd. VII, Nr. 2, S. 15-16).

* * By Decree of 23 November 1934, relative to the inspection of consignments of fresh fruits, living plants and parts of living plants with regard to the presence of San José scale [*Aspidiotus perniciosus*], the list of customs houses charged with this inspection has been recently revised. This list gives the customs houses authorised to accept consignments of fresh fruits and fresh fruit residues coming from America, Australia including Tasmania and New Zealand, China, Hawaii, Japan, Yugoslavia, Mesopotamia, Austria, Portugal, Rumania, Union of South Africa, Hungary, and India. These customs houses are also authorised to accept consignments of fresh fruits, fresh fruit residues, living plants and parts of living plants coming from Bulgaria, Greece, Poland, Spain, and Czechoslovakia. (*Ibid.*, 1. Januar 1935, Nr. 1, S. 1-3).

* * By Ordinance of 17 December, 1934 concerning the inspection of potato plants intended for export, it is established that all consignments of potato plants officially recognised should, before exportation, be inspected, from a qualitative and phytosanitary view point, by an authorised expert. The provincial centres of plant protection are entrusted with carrying this inspection. The Corporation of Agriculture ('Reichsnährstand') has established the technical rules to be followed. (*Ibid.*, 1. Februar 1935, Nr. 2, S. 16-17).

* * By Decree of 22 December, 1934, the list is modified of customs houses authorised to accept consignments of fresh fruits, living plants and parts of living plants subject to phytosanitary inspection [see this *Bulletin*, 1934, No. 10, p. 221] (*Ibid.*, S. 17).

Germany (Hamburg). — By the Law of 7 December, 1934, relative to the control of the beetle *Hylotrupes bajulus*, insurance against damage caused by this insect is instituted. The Fire Insurance Society of Hamburg ('Hamburger Feuerkasse') is obliged to pay an indemnity to all its clients insured against fire for all damage directly caused by this beetle.

The Society, on the other hand, is authorised to insist that the proprietor should apply the measures of control judged necessary by the Society.

The expenditure incurred in this control will be born by the Society. In cases where persons interested do not carry out the necessary measures the Society can have the work executed by the competent authority. The Society will collect the funds intended to cover the costs of indemnity and expenditure on the control of the insect. For this purpose, it is authorised to demand from persons insured a special contribution not exceeding 0,15 % of the value estimated. Insured persons are obliged to ascertain if their houses are invaded or not by the beetle and, their presence being discovered, these persons are obliged to make a declaration within 14 days.

The indemnity paid by the Society will be fixed by an estimate made by experts. The indemnity will not be paid until after the damage has been repaired and the wood attacked burnt.

The Law came into force on 1. January, 1935 and will remain provisionally in force until 31 December, 1936. (*Ämtliche Pflanzenschutzbestimmungen*, Berlin, 1. Januar 1935, Bd. VII, Nr. 1, S. 5-8).

Germany (Prussia). — By Decree of 13 December, 1934, the provisions contained in the Decree of 4 March, 1933, concerning the protection of fields and gardens against pigeons [see this *Bulletin*, 1933, No. 7, p. 161] have been modified.

Owners of pigeons should, during the period of spring and autumn sowing, prevent their pigeons entering the fields and gardens recently sown. The local police authority will fix this period each year in accordance with local conditions. It should not exceed one month either in the spring or autumn except in exceptional cases. (*Ämtliche Pflanzenschutzbestimmungen*, Berlin, 1. Februar 1935, Bd. VII, Nr. 2, S. 18).

Argentine Republic. — By 'Acuerdo de Ministros' No. 50.053. of 15 October, 1934, approval is given to the purchase of eggs of the South American locust [*Schistocerca paranensis*] by the 'Banco de la Nación Argentina', through its branches in the interior of the country, during the year 1933, as required by the 'Comisión Nacional de Defensa contra la Langosta', dependent from the Ministry of Agriculture. (*Boletín Oficial de la República Argentina*, Buenos Aires, 30 de enero de 1935, año XLIII, núm. 12.189, pág. 1154).

Brazil. — The Ministerial Resolution of 19 November, 1934, establishes *inter alia*:—

(1) Prohibition, in the whole of the country, for importation from any country of plants and parts of plants as follows:—

(a) Cotton seeds and cotton bolls;

(b) Suckers and pseudo-bulbs of bananas;

(c) Coffee berries, shoots of coffee trees, seeds and shoots of other Rubiaceae;

(d) Shoots, fruits and seeds of cacao;

(e) Shoots, buds and seeds of sugar-cane;

(f) Seeds, bud grafts and shoots of plants belonging to the genera *Citrus*, *Poncirus*, *Fortunella* and of all other genera of the sub-family Aurantioideae of the family Rutaceae, also of the genera *Evodia*, *Melicope*, *Casimiroa*, and *Toddalia* also belonging the above-mentioned family;

(g) Seeds and shoots of *Eucalyptus* grown in New Zealand, Australia, South Africa and Argentine Republic.

(2) Prohibition to import alfalfa seeds and all other forage plants if in the health and origin certificate it is not expressly stated that they are exempt from seeds of *Cuscuta*.

(3) Prohibition to import potato tubers which are not accompanied by a health and origin certificate in which it is obligatory to declare that the potatoes come from a region exempt from the following parasites: *Synchytrium endobioticum*, *Spongospora subterranea*, *Phthorimaea operculella*, and *Leptinotarsa decemlineata*.

The importation of potatoes from Portugal and Spain will only be permitted at the port of Rio de Janeiro, and only if this product is intended exclusively for food purposes.

(4) Prohibition to import maize seed if, in the health and origin certificate, it is not expressly stated that this cereal comes from a region exempt from *Pyrausta nubilalis*.

(5) Prohibition to import branches of cotton and residues of cotton, also of straw and panicles of sorghum, if not accompanied by a certificate stating that these products have been thoroughly cleansed.

(6) The following products imported are exempted from health and origin certificates: garlic, onions, cumin, black pepper, anise, cloves, almonds, walnuts, hazel-nuts, canary-seed, and panic grass.

In the above concession will also be included, but only if imported for food purposes or industry (forage and fermentation industries), wheat, oat, rye, barley, and flax seeds.

(7) Imports of plants and parts of plants coming from abroad will only be permitted by the ports of Manaus, Belém, Recife, São Salvador, Rio de Janeiro, São Francisco, Rio Grande, Porto Alegre, and Corumbá.

(8) The following prohibitions are declared:—

(a) In the State of Rio Grande do Sul, it is forbidden to send to any part of the country fresh fruits, bud grafts, runners, and shoots of fruit-bear-

ing plants, except when accompanied by a transport permit authorised by the Service of 'Defensa Sanitaria Vegetal';

(b) In the States of Parahyba and Pernambuco, it is forbidden to send to any part of the country shoots or living parts of coffee, also other species of the family of Rubiaceae, except when accompanied by a transport permit declaring them to be in a healthy condition;

(c) In the State of São Paulo, it is forbidden to send to any part of the national territory suckers and bulbs of bananas, except when these products are accompanied by a certificate of disinfection delivered by the competent Service of the said State or by one of the disinfection Stations controlled by the Service of 'Defensa Sanitaria Vegetal';

(d) In the Federal District and neighbouring municipalities, it is forbidden to transport suckers of the plants belonging to the genus *Citrus* if accompanied by any earth. Those interested should remove the leaves of the said suckers and transport them packed in moss or saw-dust.

(g) Approval is given to the model health and origin certificate.

(10) It is prohibited, for cultivators of crops for sale, to conserve other species of plants which, not being subject to scientific control, may serve as hosts for parasites of those crops. (*Diario Oficial*, [Rio de Janeiro], 30 de novembro de 1934, anno LXXIII, núm. 276, págs. 24061-24062).

Chile. — The Law No. 5.504 of 29 September, 1934, authorises the expenditure up to the sum of 300.000 'pesos' annually on the control of the pests which attack national fruit growing; establishes a tax of 2 'centavos' per kilo on dried and preserved fruits and 1 'centavo' per kilo on fresh fruit exported; also authorises the expenditure, for the year 1934, up to the sum of 500.000 'pesos' to control the pests which attack fruit growing and to construct insectaria. (*Diario Oficial de la República de Chile*, Santiago, 2 de octubre de 1934, año LVII, núm. 16,984, págs. 3121 y 3122).

United States of America. — By revision of Sugarcane Quarantine No. 15 (Foreign), approved on 20 September, 1934 and effective on 1 October, 1934, the importation into the United States of canes of sugarcane, or cuttings or parts thereof, sugarcane leaves, and bagasse, from all foreign countries and localities, is prohibited. This prohibition shall not apply to importations by the United States Department of Agriculture for scientific or experimental purposes, nor to importations of specific materials which the Department may authorize under permit on condition that they have been or are to be so treated, processed, or manufactured that, in the judgement of the Department, their entry will involve no pest risk. (United States Department of Agriculture. Bureau of Entomology and Plant Quarantine. *Revision of Sugarcane Quarantine No. 15 (Foreign)*, Washington, 1934, 1 p.).

* * * Revised rules and regulations supplementary to Notice of Quarantine No. 45, on account of gipsy moth (*Porthetria dispar*) and brown-tail moth (*Nygmia phaeorrhoea* formerly referred to as *Euproctis chrysorrhoea*), have been approved

on 27 September, 1934 and shall be effective on 2 October, 1934. The revision reduces the size of the regulated area in Vermont and designates as generally infested certain territory of Connecticut, Maine, New Hampshire, and Vermont which has heretofore been classed as slightly infested. It also modifies the boundaries of the area designated as brown-tail moth infested in the States of Maine, Massachusetts, and New Hampshire; and adds parts of four counties in Vermont.

Additional changes of interest to shippers include the exemption of such woody plants as have been grown in the greenhouse throughout the year and are so labeled; the authorization of the shipment of 'Christmas trees' from the generally infested area when grown as nursery stock in a cultivated nursery and certified under the nursery stock provisions; the adding of empty cable reels to the list of restricted articles; and slight modifications in the procedure for the certification of car-lot shipments. (United States Department of Agriculture. Bureau of Entomology and Plant Quarantine. *Gypsy Moth and Brown-Tail Moth Quarantine* (Quarantine No. 45). *Revision of Regulations*, Washington, 1934, 8 pp.).

* * By revision of Notice of Quarantine No. 30, approved on 4 October, 1934 and effective on and after 10 October, 1934, the commercial movement of any variety of sweet potato (*Ipomoea batatas* Poir.) is prohibited from Hawaii and Puerto Rico to prevent the spreading of sweet potato scarabee (*Euscepes batatas* Waterh.) and of sweet potato-stem borer (*Omphisa anastomosalis* Guen.). (United States Department of Agriculture. Bureau of Entomology and Plant Quarantine. *Sweetpotato Quarantine* (Domestic). *Notice of Quarantine No. 30* (Revised). [Washington], 1934, 1 p.).

* * The Amendment No. 2 to revised rules and regulations supplemental to Notice of Quarantine No. 52, on account of the pink bollworm of cotton [*Platyedra gossypiella*], approved on 24 October, 1934 and effective on 31 October, 1934, modifies the area regulated by bringing under restriction the counties of Dixie, Hamilton, Lafayette, Levy, and Taylor in the State of Florida, and all of Ector and Andrews Counties and part of Midland County in Texas. The Florida counties are brought under regulation at this time because of the recent finding of pink bollworm infestation in Hamilton and Levy Counties, and because Dixie, Lafayette, and Taylor Counties are contaminated by reason of ginning their seed in the counties when infestation has been found. These latter counties (Dixie, Lafayette, and Taylor) have no ginning facilities. The counties in Texas are added as a result of pink bollworm infestation being found in gin trash in Midland, Tex., involving part of Midland County, as well as Ector and Andrews Counties. (United States Department of Agriculture. Bureau of Entomology and Plant Quarantine. *Modification of Pink Bollworm Quarantine Regulations*, [Washington], 1934, 3 pp.).

* * By revision of Notice of Quarantine No. 70 on account of the Dutch elm disease (*Graphium ulmi*), approved on 20 December, 1934 and effective on and after 1 January, 1935, the importation into the United States from the

continent of Europe of the following articles is prohibited: (a) Seeds, leaves, plants, cuttings, and scions of elm and related plants; (b) logs of elm and related plants; (c) lumber, timber, or veneer of such plants if bark is present on them; (d) crates, boxes, barrels, packing cases and other containers, and other articles manufactured in whole or in part of the wood of elm and related plants, if the elm wood or wood of related plants is not free from bark.

Exceptions to the above prohibitions may be authorized for entry under permit under such conditions and regulations as the Secretary of Agriculture may prescribe, or when the particular article or material has been or is to be so treated, prepared, or processed that, in the judgement of the Secretary of Agriculture, its unrestricted entry involves no risk of pest introduction.

The expression 'elm and related plants' means plants of all genera and species of the family Ulmaceae, including the genera *Ulmus*, *Celtis*, *Zelkova*, *Ampelocera*, *Aphananthe*, *Barbeya*, *Chaetachne*, *Chaetoptelea*, *Gironniera*, *Holoptelea*, *Lozanella*, *Parasponia*, *Phyllostylon*, *Planera*, *Pteroceltis*, *Trema*, and all species thereof. (United States Department of Agriculture. Bureau of Entomology and Plant Quarantine. *Dutch Elm Disease Quarantine. Notice of Quarantine No 70*. [Washington, 1934], 2 pp. [Mimeographed]).

Republic of Guatemala. — By letter No. 123 of 1 December, 1934, the Ambassador Extraordinary and Plenipotentiary of Mexico at Guatemala City proposed to the Government of Guatemala to establish a Convention, by the simple exchange of official letters, in order to carry out a simultaneous control of the South American locust (*Schistocerca paranensis* Burm.).

By letter of 15 December, 1934, the Secretary of State for Foreign Affairs of the Republic of Guatemala, in accord with the Secretary for Agriculture, has informed the Ambassador of Mexico that the Government of Guatemala has accepted the Convention proposed by the Government of Mexico, on the following terms:—

Article 1. — The Secretary of State for Agriculture of the Republic of Guatemala will establish, in the infested frontier zone and in the most convenient place, a 'Jefatura de la Campaña contra la Langosta' to supervise and intensify the work of locust extermination in conformity with the governmental 'acuerdos', dated 9 May, 1925 and 27 February, 1926. This 'Jefatura' will collaborate against the locusts with the 'Jefatura' established by the Mexican Government in Tapachula, Chis., according to a programme approved by the respective Secretaries of State who will have the power to introduce the changes and modifications necessary in the programme.

Article 2. — Both Governments engage to give all facilities for the free passage of staff and material for the control from one country to the other according as the necessity may arise.

Article 3. — Both Governments will establish, within the agricultural Services and within economic possibilities, in accordance with the resolution taken at the Seventh Pan-American Conference at the session of 23 December, 1933, a

Centre or Office of locust investigations of a permanent nature and which will collect all the data on locust movements within the country and without, and will study all the biological, physical and chemical methods for locust control and will engage to periodically inform one or other of the contracting parties on the work carried out and the results obtained.

Article 4. — Both Governments engage to establish similar Conventions with the other adjacent countries if there exist movements of swarms of locusts of an international character in the respective frontier zones. (*Diario de Centro América*, Guatemala, 22 de diciembre de 1934, tomo XII, núm. 42, pág. 217).

Morocco (French Zone). — A Decree of the Director of Waters and Forests, dated 22 December, 1934, authorises the destruction of rabbits in certain zones of the circle of Loukkos, Ouezzane, up to 31 August, 1935. (Empire Chérifien. Protectorat de la République Française au Maroc. *Bulletin Officiel*, Rabat, 4 janvier 1934, XXIV^e année, n^o 1158, p. 11-12).

Mozambique. — The Diploma Legislativo 'No. 384-A of 4 August, 1933, establishes and defines the collaboration in the control of the locust invasion that is encumbent on persons other than natives (farmers, stock-breeders, etc.), and on all those persons, who individually or collectively, are occupiers of lands, under whatever title, and constitutes district commissions to direct this work which will be carried out according to instructions which will be published at in due course. (República Portuguesa. Colónia de Moçambique. *Boletim Agrícola e Pecuário*, Lourenço Marques, 1934, Janeiro a Dezembro de 1933 (N.^{os} 1 a 4), págs. 239 a 241).

Peru. — The Resolution of 29 October, 1934, in conformity with the Resolution of 1 October of the same month [see this *Bulletin*, 1935, No. 3, p. 65], declares the valley of Cañete to be a 'zone of protection' and the region of the Imperial to be a 'zone of control' with regard to the 'piojo blanco' of cotton [*Hemichionaspis minor*]. At the same time other measures are laid down relative to the control of the said pest. (*La Vida Agrícola*, Lima, (Perú), diciembre 1^o de 1934, vol. XI, no. 133, págs. 969 y 970).

Tripolitania. — By Decree of the Governor, dated 31 December, 1934, it is permitted to hunt, kill and capture sparrows in Lybia at all times and at all stages of development. Persons provided with a permit for systematic hunting, delivered by the authorities for public safety, may make use of fire arms for this purpose. It is also permitted to capture and kill sparrows utilising all means for capturing birds such as nets, birdlime, etc. (*Bollettino del Regio Ufficio per i Servizi Agrari della Tripolitania*, Tripoli, gennaio 1935; anno IV, n. 1, p. 26).

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 [A disease caused by an organism closely resembling *Pseudomonas intybi*].

NOTES

National Natural History Museum at Paris. — This Museum will celebrate its' third centenary in 1935. On this occasion festivities will take place in Paris from 24 to 29 June next.

Vith International Congress of Entomology. — This Congress will take place at Madrid from 6 to 12 September, 1935.

XIIth International Congress of Zoology. — This Congress will take place at Lisbon from 15 to 21 September, 1935.

INTERNATIONAL BULLETIN

OF PLANT PROTECTION

DISCOVERIES AND CURRENT EVENTS *

Angola: Locust Movements (*Nomadacris septemfasciata* and *Locusta migratoria migratorioides*) (1).

October, 1934.

In all the table lands of the Colony the activities of the swarms has diminished considerably owing to the rains and in some regions the locusts have completely disappeared.

On the eastern border the situation is much worse as apparently the invasions do not show any pronounced tendency toward forming large migratory swarms.

The coast is beginning to be invaded by swarms coming from the frontiers. The majority of these swarms are already fully developed. The river valleys have served as lines of penetration by the swarms.

There is reason for thinking that during this year the swarms in all the coastal zone of the Colony will be much more numerous than last year.

The species which continues to be most common is *Nomadacris septemfasciata*.

November, 1934.

Owing to the rains the situation on the table lands of Malange and in the South of the Colony continues to improve generally, chiefly with regard to swarms.

At present a great recrudescence of swarms is reported in the districts in the North and on the coast, the exodus from the interior towards the coast is increasing, from the South of Benguela towards the neighbourhood of the river Zaire. The flight is increasing directed at present from East to West, and sometimes from South to North, although some swarms are flying South. In a short time all the farms and river districts on the coast will be infested by the swarms and also, though later, by egg pods and hoppers.

Already numerous outbreak centres have been discovered in Bié, Malange, and North Quanza, it is believed that the same will shortly occur in other districts.

* Under this and the next heading the countries are arranged in French alphabetical order.

(1) Communication from Mr. JORGE DE BARROS RODRIGUES QUEIROZ, Agronomy Engineer attached to the Service of Locust Control, Luanda, transmitted to the Institute by the Government General of the Colony.

December, 1934.

In comparison with the previous month it may be said that the situation has become greatly aggravated in almost all the Colony, principally in the provinces of Huila, Benguela, and Luanda, due, chiefly, to various invading swarms from the Belgian Congo and, probably, from the South West of Africa or the frontier regions of that territory. The great scarcity of rain has aggravated the situation greatly. It has already been ascertained that the area covered by layings is very considerable, no sure forecast can be made as, in the first place, reports received from the various zones on the movements of locusts are incomplete and, in the second place, the attacks of parasites, principally fungi and Diptera, is becoming an important factor in the destruction of swarms and outbreak centres.

Argentine Republic: Fungous Parasites of Scale Insects of Fruit Trees (1).

It is a universally known fact that certain fungi periodically cause the death of a great quantity of insects, thereby exercising a biological control.

In the Argentine Republic the work that has been carried out on the use of these micro-organisms has been almost entirely confined to the fungi which attack the locust, the principal worker in this field being L. Bruner.

Several years ago my attention was drawn to some species of fungi which frequently accompany the scale insects of fruit trees in this country and whose habits have been unobserved or interpreted erroneously by the few authors who studied the subject.

With regard to the agricultural importance of this question which we will now discuss, it is enough to mention that A. C. Lundin, formerly Chief of the Experiment Station 'Centinela', which the North West Railway established at San José, Misiones, considers that it will not be possible to control the scale insects which attack the citrus plantations without the help of the entomogenous fungi which have increased in this locality in a manner that is truly extraordinary. The same thing could be said of other fungi which have been found in the province of Buenos Aires and the Islands of the Delta of the Paraná, an environment so propitious for their development that a veritable biological equilibrium has been established in the diffusion of various scale insects, very difficult to control with the common insecticides on account of the form they adopt to protect themselves.

In this communication we will deal with the following fungi:— 'corona blanca', 'hongo negro', 'cabeza roja', 'cabeza blanca', 'costra canela', and 'hongo felpudo negro'.

The fungus 'corona blanca' (*Cephalosporium lecanii* Zimm.) is very common on *Mesolecanium deltae*, though by no means rare on *Lecanium oleae*, *L. persicae*

(1) Communication from the official correspondent of the Institute, Mr. JUAN B. MARCHIONATTO, Agronomy Engineer, Director of the 'Sanidad Vegetal', Ministry of Agriculture, Buenos Aires.

and *L. perinflatum* in the province of Buenos Aires and the Islands of the Delta of the Paraná.

The scale insects attacked by this fungus are covered with a mycelium of a whitish colour which leaves the insect fixed in the place where it has died. In adult insects the scale finally drops off, leaving the body covered with an abundant yellowish powder which represents the spores of the parasite.

The fungus 'negro' (*Myriangium duriae* Mont. and Berk.) is very common in the province of Buenos Aires on *Aspidiotus perniciosus*; since the year 1932 it has been also observed on *Chrysomphalus aurantii* in the region of Pindapoy.

The scale insects attacked by this fungus are transformed into small shapeless scabs, hard and black in colour, which easily adhere to the substratum or organ of the plant attacked by the scale insect (it is also found associated with another fungus 'cabeceita roja', *Fusarium aspidioti* Saw.).

The fungus 'cabeza roja' (*Sphaerostilbe aurantiicola* Petch) is frequently found on *Chrys. aonidium* in the whole coastal region and especially in the province of Corrientes and the government of Misiones. It has recently been observed on the *Chrys. aurantii* *.

The scale insects attacked are covered with a mass of waxlike spines of a purple colour which are very easily detached from the body.

The fungus 'cabeza blanca' (*Podonectria cocoicola* Petch.) is found in great quantities on *Lepidosaphes beckii* in the provinces of Tucumán and Corrientes and in the government of Misiones.

The scale insects attacked are entirely covered with small, white, conical protuberances.

The fungus 'costra canela' (*Septobasidium albidum* Pat.) accompanies *Lepid. beckii* in the whole citrus fruit growing region along the coast.

The scale insects attacked are enveloped in a crust, brown or cinnamon colour with white edges, which adheres firmly to the organs of the plants infested by the insects. This fungus has been erroneously considered a parasite of the plant when in reality its injurious action is due to the difficulties which the organs of the plants attacked have in performing their normal functions.

The fungus 'felpudo negro' (*Pezizotrichum saccardinum* Rang.) was observed for the first time in 1932 in the first section of the Islands of the Delta of the Paraná on *Aspid. perniciosus*.

The scale insects attacked are covered with a kind of black felt which finally surrounds the branches entirely. This fungus has been considered in Brazil a parasite of the branches of the pear tree.

The fungi 'costra canela' and 'felpudo negro' develop in such density as to prevent the normal functioning of the leaves and branches and are able to cause the death of the plants if their action is prolonged for any length of time.

* A very similar species is *Sphaerostilbe flammae* Tul. which lives as a parasite of the 'cochinilla blanca' (*Leucaspis pusilla*) of the pine.

Brazil: Preliminary List of Diseases of Ornamental Plants in the State of Minas Geraes (1).

Due to a particularly favourable climate, flowering plants, grown in the open in Minas Geraes, attain a perfection difficult to surpass in any other part of the world. Such flowers as dahlias, gladiolus, zinnias, sweet peas and roses are especially notable for their exceeding beauty, but are not produced on a large commercial scale because of the lack of accessible markets.

In addition to the diseases commonly present on ornamental plants in this State, as seen by the list given, there are certain affections which appear during or after hot rainy spells, more frequently in those months between December and April, or the wet summer months.

The first of these is flower blighting caused by *Botrytis vulgaris* Fr., recorded on the following flowering plants: *Begonia*, *Dahlia*, *Dianthus*, *Gladiolus*, *Lathyrus*, *Pelargonium*, *Polianthes tuberosa*, *Rosa*, *Sanchezia nobilis*, *Watsonia iridifolia*, and *Zinnia* sp.

The second is collar rotting or basal rot, a common symptom of which is wilting. Two different pathogens have been found associated with this malady, one, *Rhizoctonia solani* Kühn, destroying plantings of *Dianthus*, *Impatiens*, *Cyanotis*, *Silene* and *Viola*, and the other, *Sclerotium rolfsii* Sacc., attacking *Amaryllis*, *Antirrhinum*, *Dahlia*, *Dianthus*, *Papaver*, and *Zephyranthes*. In the case of the bulbous or tuberous plants of this latter group, further loss occurs in the form of rotting in storage.

ACALYPHA RUBRA.

Cercospora acalyphae Pk. Leaf spot

ALTHAEA ROSEA.

Puccinia malvacearum Mont. Rust

ANTIRRHINUM SP.

Heterodera radiculicola (Gr.) Müller Root knot

BEGONIA SP.

Phyllosticta begoniae Rangel Leaf blight

BELLIS SP.

Oidium sp. Powdery mildew

CALENDULA OFFICINALIS.

Cercospora calendulae Sacc. Leaf blight

CAMELLIA JAPONICA.

Pestalozzia theae Saw. Gray leaf blight

CANNA INDICA.

Puccinia cannae Winter Rust

(1) Communication from Mr. ALBERT S. MÜLLER, Professor of Phytopathology, Higher School of Agriculture and Veterinary Science, State of Minas Geraes, Viçosa, transmitted to the Institute by Mr. J. C. BELO LISBÔA, Director of the above mentioned School.

CHRYSANTHEMUM SP.

Oidium sp. Powdery mildew

DAHLIA SP.

Cercospora grandissima Rangel

Leaf blight

Phyllosticta dahliaecola Brum.

Leaf spot

Oidium sp.

Powdery mildew

Mosaic

DIANTHUS SP.

Alternaria dianthi Stev. & Hall.

Leaf blight

Septoria dianthi Desm.

Leaf spot.

EUPHORBIA (POINSETTIA) SP.

Cercospora pulcherrima Tharps.

Leaf spot.

GLADIOLUS SP.

Mosaic

HIBISCUS SP.

Heterodera radiculicola (Gr.) Müller

Root knot

HYDRANGEA HORTENSIA.

Cercospora hydrangeae Ell. & Ev.

Leaf spot

IMPATIENS BALSAMINA.

Cercospora impatientis Bauml.

Leaf spot

Oidium sp.

Powdery mildew

LILIUM SP.

Mosaic

LOBELIA SP.

Cercospora lobeliae Kell. & Sw.

Leaf spot

NERIUM OLEANDER.

Gloeosporium oleandri Sacc.

Anthraxnose or leaf spot

ROSA SP.

Actinonema rosae (Lib.) Fries

Black spot

Cercospora rosaecola Pass.

Leaf blight

Oidium leucoconium Desm.

Powdery mildew

Phragmidium subcorticium (Schr.) Went.

Rust

Sphaceloma rosarum Jenkins

Leaf spotting

SYRINGA SP.

Cercospora lilacis (Desm.) Sacc.

Leaf spot

ZINNIA SP.

Cercospora atricincta H. & W.

Leaf spot

Oidium sp.

Powdery mildew

Mozambique: Locust Movements (*Nomadacris septemfasciata* and *Locusta migratoria migratorioides*) (1).

Information relative to the Months of October
and November, 1934.

Nyassa District. — Extensive movements of swarms have been reported coming from the North (Tanganyika Territory) and flying South. Other swarms coming from Nyasaland passed over Mandimba flying West.

Cape Delgado District. — A swarm was reported in October. In November the locust movements in this district were of little importance. The small swarms reported at the beginning of the month flew from East to West.

Tete District. — In the middle of September various swarms, coming from the North of Nyasaland, descended the Chire valley, some followed the Zambesi towards Massingire and Leste and the others flew South towards the territory of Manica and Sofala. At the end of this month locust movements towards the North diminished and swarms coming from the territory of Manica and Sofala crossed the Zambesi and entered this district.

In the circumscriptions of the North-East region of Tete the locust movement was of small importance though it increased towards the end of the month in the North.

Locust movements during the months of October and November are unknown.

Mozambique District. — In October locust movements were almost nil. The adult swarms reported disappeared for the greater part on account of *Empusa grylli*. No information has been received relative to the month of November.

Quelimane District. — At the beginning of October the frontier regions of Nyasaland were invaded by large and numerous swarms extending slowly towards other regions and it may be said that by the end of the month locusts had invaded the whole of the district except the regions of Leste do Chinde, Pebane and Molocué, situated in the North of the district. These swarms have caused great damage. No information has been received with regard to the month of November.

Inhamitanga District. — In October there was a certain increase in locust movements in various directions. In November the movements diminished and displacements were from North to South and afterwards towards the West. The central part of the district was the most invaded, few swarms being reported in the frontier regions of the South. No laying has been reported.

(1) Communication from Mr. JULIO GARDÉ ALFARO CARDOSO, Chief of the Entomological Section, Lourenço Marques, transmitted to the Institute by the Director of the Agricultural Services of the Colony.

Lourenço Marques District. — In October large swarms were reported moving from South to North. Some entered the frontier at Catuane coming from Zululand where the swarms had been attacked by aeroplanes, the dust cloud thrown by them having caused no damage to cattle. However, with regard to the means of control against swarms, in spite of the tests carried out in the Union of South Africa with aeroplanes, no practical and efficacious means has yet been found. Flame throwers are very costly and, as they cannot be used at night, very special conditions are necessary for their employment.

In the month of November, the swarms moved about generally from South to North, and to a less degree from East to West, having caused considerable damage. It may be considered that the whole of the regions in the South were invaded especially by swarms coming from Zululand and Swaziland which united with those already existing in the valleys of Incomati and Maputo. Laying was reported at the river Tembe y Xanavane; in Incomati the destruction of hoppers is being carried out.

It has been noticed, moreover, that the number of males greatly exceeds females. There has been evidence of the existence of parasitised locusts.

Territory of Manica and Sofala. — This Territory has been completely attacked and the destruction caused by locusts is of considerable importance. The situation is much worse than at the same time last year. The movement is generally from South to North and laying has been reported in various places. In the country round Sena Sugar, along the Zambesi, 10 to 15 sacks of hoppers have been collected daily. Hoppers have appeared in the circumscription of Neves Ferreira.

Greece: Losses caused by Diseases, Pests, and Meteorological Conditions (1).

The Phytopathological Institute Benaki at Kiphissia has undertaken the work of estimating the losses caused to agricultural production in Greece by crop diseases, pests and meteorological conditions.

An inquiry made during two consecutive years in collaboration with the agricultural Services has shown that the damage caused amounts, in drachmai, to the following figures:—

For the year 1932, the value of agricultural products amounted to 12 751 059 000; damage caused by animal pests amounted to 585 553 000, those caused by vegetable parasites to 548 058 000, and those by meteorological conditions to 1 049 866 000.

For the year 1933 the value of agricultural products amounted to 14 576 148 000; damage caused by animal pests amounted to 735 087 000, those by vegetable parasites to 503 637 000, and those by meteorological conditions to 854 373 000.

(1) Communication from the official correspondent of the Institute, Professor Dr. C. A. ISAAKIDES, Technical Adviser to the Minister of Agriculture, Athens.

Southern Rhodesia: Locust Invasion, 1932-1935 (1).

Monthly Report No. 26. January, 1935.

During January the locust position has shown progressive improvement and at the end of the month it can be stated definitely that the Colony has been saved through natural agencies from what threatened to be a phenomenal hopper outbreak.

Not only have the hatchings on the whole been infinitely lighter and more limited in distribution than the distribution of egg-laden winged locusts, or even reports of egg-laying indicated, but *Empusa grylli* has quickly appeared amongst the hoppers in the more humid districts and has apparently been responsible for very heavy mortality.

At the end of the month there remain only two districts, namely Wankie and Nyamandhlovu, both adjacent to the western border, where according to report the position is at all serious.

Red Locust (*Nomadacris septemfasciata*, Serv.).

Practically all specimens received at Salisbury have belonged to this species.

The hopper stage has been mainly in evidence and very few swarms of fliers were reported up to the middle of the month. It is, however, to be noted that the weather was extremely wet and largely overcast, tending to depress activity. Comparative absence of winged swarms does not necessarily imply similar absence of scattered individuals, and there were abundant indications of disintegration of the winged swarms in December.

About the 19th a recrudescence of invasion commenced, large and healthy winged swarms being reported to be coming in from N. Bechuanaland flying in a westerly direction, the districts most involved being Wankie, Nyamandhlovu and Bulalima-Mangwe. These incoming swarms were in egg-laying condition and are reported to have laid eggs freely in several districts. Egg-laying has also been reported during the month in several localities in the Mazoe district and in Ndanga, Gutu, Makoni, and Bulawayo districts.

Tropical Migratory Locust (*Locusta migratoria migratorioides*, Rcm. & Frm.).

The only record of this species during the month was the unexpected discovery of a swarm of fifth-stage hoppers and newly matured adults in the Hartley district on the 3rd. The early layings by this species seem generally to have failed, and heavy hatchings anticipated in the Wankie district and the Zambesi Valley, in the Lomagundi district, have failed to materialise.

(1) Communication from the official correspondent of the Institute, Mr. RUPERT W. JACK, F.E.S., Chief Entomologist, Department of Agriculture, Salisbury, Southern Rhodesia.

Brown Locust (*Locustana pardalina*, Wlk.).

On the 25th of the month advice was received from the Union Department of Agriculture to the effect that swarms of this species were flying in N. Bechuanaland and that some were close to the Rhodesian border. No swarms of the Brown Locust have, however, been reported as yet within the colony. It would appear that the Colony is in danger of invasion by this species during the coming dry season although this will depend upon the success or otherwise of the next generation in Bechuanaland.

Enemies and Disease.

The White-bellied Stork (*Abdimia abdimii*) has been very abundant and has been reported as attacking the hoppers in certain districts. The White Stork (*Ciconia alba*) has also been reported, although it has not been much in evidence around Salisbury.

There have been several verbal reports of parasites, possibly *Blaesoxipha* sp. in adult locusts.

Almost all egg deposits seem to have been attacked in a varying degree by *Stomatorrhina*.

The Locust Fungus (*Empusa grylli*) has attacked hoppers freely in the second stage. The major portion of the Colony seem now to be thoroughly infested with this disease and, unless abnormally dry weather supervenes, it is difficult to foresee extensive survival to the adult stage, except perhaps in the western district.

Outlook.

The outlook for the present and next season is very encouraging as far as the Red Locust is concerned, but, as already stated, trouble may be experienced with the Brown Locust, and the Tropical Migratory Locust is an unknown quantity.

It is to be realised, however, that in the course of the previous swarm cycle the Red Locust remained in South Africa for a large number of years, notwithstanding the presence of *Empusa*, and that it demonstrated its capacity for recrudescence after being reduced to small numbers by natural agencies. The cycle may now die down altogether or an uncertain period of years may witness outbreaks of varying intensity.

LEGISLATIVE AND ADMINISTRATIVE MEASURES

Germany. — An amendment, dated 21 February, 1935, to the provisions concerning the protection against San José scale [*Aspidiotus perniciosus*] and the apple maggot [*Rhagoletis pomonella*] [see this *Bulletin*, 1934, No. 10, p. 221] established that railway waggons for carrying fresh fruit, living plants and parts of living plants subject to phytosanitary inspection, originating from Hungary, should have their side doors sealed. The seals should be marked 'M. Kir. Növényvédelmi Szolgálat Budapest' (Royal Hungarian Service of Plant Protection, Budapest). (*Amliche Pflanzenschutzbestimmungen*, Berlin, 1. März 1935, Bd. VII, Nr. 3, S. 28).

Germany (Anhalt). — By Decree of 28 January, 1935, modifying the Police Ordinance of 31 October, 1928 [see this *Bulletin*, 1929, No. 6, p. 83] concerning the control of field and forest pests, provisions have been established for the control of the Beet Leaf Bug [*Piesma quadrata*].

The Police authorities are authorised to declare infested all districts where this insect has caused serious damage. In these districts the control is compulsory for all beet-root growers.

In all fields intended for growing beet-roots, it is necessary, before the final sowing, to sow beet-roots intended to act as traps. These beet-roots should be sown so as to form strips at least 4 metres wide and running the entire length of the field.

The young plants growing in these strips should be dug in as soon as they have been penetrated by the insects. The epoch at which this work should be carried out will be fixed by the Police authorities. The final sowing cannot be made until after the snare-strips have been dug in.

On application by the owner, in exceptional circumstances, these snare-strips need not be sown, although he cannot sow his beets until after the snare-strips in neighbouring fields have been dug in.

It is also forbidden to sow beet-roots in gardens before the snare-strips in neighbouring fields have been dug in.

Provisions for establishing and digging in these snare-strips will be published. (*Amliche Pflanzenschutzbestimmungen*, Berlin, 1. März 1935, Bd. VII, Nr. 3, S. 28-29).

Germany (Oldenburg). — By Decree dated 4 February, 1935, provisions have been laid down concerning the protection of fields and gardens against pigeons. These provisions correspond with those adopted in Prussia by the Decree of 13 December, 1934 [see this *Bulletin*, 1935, No. 4, p. 86]. (*Amliche Pflanzenschutzbestimmungen*, Berlin, 1. März 1935, Bd. VII, Nr. 3, S. 29-30).

Germany (Prussia). — By Police Ordinance of 6 February, 1935, the control of the apple sucker (*Psylla mali*) has been made compulsory in the circumscription of Stade, province of Hanover.

All owners of apple trees are obliged to spray their trees, before the end of March, 1935, with 'carbolineum', lime sulphur mixture, or all other means of treating fruit trees; they may also use preparations with a nicotine basis for spraying carried out before the blossom opens. This Ordinance will remain in force until 1 June, 1935. (*Amliche Pflanzenschutzbestimmungen*, Berlin, 1. März 1935, Bd. VII, Nr. 3, S. 10-11).

Argentine Republic. — By Decree No. 55.057 of 19 January, 1935, railway companies and other transport services which accept and transport vegetables and fresh fruits in contravention of the provisions of the Decree No. 43.471 of 16 June, 1934 [see this *Bulletin*, 1934, No. 9, p. 203], will be liable to a fine of from five to one thousand 'pesos', national currency. (*Boletín Oficial de la República Argentina*, Buenos Aires, 30 de enero de 1935, año XLIII, núm. 12189, págs. 1153 y 1154).

Belgian Congo. — The Decrees Nos. 24/Agri. and 171 24/Agri. of 29 September and 2 November, 1934, providing for assistance in the control of locust invasions, regarded as public calamities, in the Provinces of Costermansville and Léopoldville, contain the same measures already adopted for the Province of Lusambo [see this *Bulletin*, 1935, No. 2, p. 36]. (*Bulletin Administratif du Congo Belge*, Léopoldville-Kalina, 1934, 23^{me} année, n° 21 (10 novembre), p. 634-635, and n° 22 (25 novembre), p. 648-649).

Cyrenaica. — The Decree of the Governor, No. 35637, dated 28 January, 1935, establishes that the presence of *Chlorita lybica* in vine-yards should be reported by the owner, or, in his absence, by the tenant, within 10 days following the appearance of the insect. Control by means of spraying is compulsory for vines situated in localities in the Colony which, on recommendation by the Bureau for Agricultural Services, are declared infested by the insect. The above Bureau is charged with the control which it will carry out free of charge with the means it has at its disposal. Both native and European owners of vine-yards are obliged to provide the labour necessary for spraying. (*Bollettino Ufficiale del Governo della Cirenaica*, Bengasi, 12 febbraio 1935, anno XXIV, Suppl. n. 1 al Bollettino del mese di gennaio 1935, pp. 63-64).

Spain. — By 'Orden' of 18 January, 1935, all consignments of potatoes intended for export abroad, proceeding from the Balearic and Canary Islands as well as from continental Spain are permanently subject to previous inspection and the delivery of corresponding phytopathological certificates.

The Agronomical Engineers, officially authorised by the National Phytopathological Service, will carry out the phytosanitary inspection and will deliver the phytopathological certificate conforming to the model agreed upon by the International Conventions or to the special exigencies of the countries of destination.

The phytopathological certificate will constitute a document independent of all those necessary for exportation, seeing that the said certificates will contain no other notifications than those of the Inspecting Engineer of the National Phytopathological Service.

The Customs of continental Spain and of the Balearic Islands, as well as the Administrations of the Free Ports of Las Palmas and Santa Cruz de Tenerife, will neither despatch nor authorise the expedition of any consignment of potatoes which is not accompanied by the corresponding certificate of phytopathological inspection. (*Gaceta de Madrid*, Madrid, 22 enero 1935, año CCLXXIV, tomo I, núm. 22, págs. 569 y 660).

United States of America. — By revision of Notice of Quarantine No. 16 (Domestic), approved on 8 December, 1934 and effective on 1 January, 1935, it shall be unlawful to move any canes of sugarcane, or cuttings or parts thereof, or sugarcane leaves, or bagasse, from the territories of Hawai and Puerto Rico into or through any other Territory, State, or District of the United States. This prohibition shall not apply to the movement of the materials mentioned by the United States Department of Agriculture for scientific or experimental pur-

poses, nor to the movement of specific materials which the Department may authorize under permit, on condition that they have been or are to be so treated, processed, or manufactured that, in the judgement of the Department, their movement will involve no pest risk. (United States Department of Agriculture. Bureau of Entomology and Plant Quarantine. *Revision of Sugarcane Quarantine No. 16 (Domestic)*, Washington, 1935, 1 p.).

* * By amendment No. 2 to revised rules and regulations supplemental to Notice of Quarantine No. 37 on account of certain injurious insects and fungous diseases, approved on 14 January, 1935, and effective on the same date, in regulation 3 provision is made for the entry into the United States of narcissus (daffodil and jonquil) bulbs from foreign countries on and after 15 December, 1936, without limitation as to quantity or use. In regulation 7 provision is made for the use of sterilized or otherwise safeguarded soil as packing for nuts and seeds as well as for bulbs and cormes. (United States Department of Agriculture. Bureau of Entomology and Plant Quarantine. *Modification of Nursery Stock, Plant, and Seed Quarantine Regulations*, Washington, 1935, 4 pp. [Mimeographed]).

* * At the same time has been announced the removal and revocation of the quarantine placed by Notice of Quarantine No. 62 (Narcissus Bulb Quarantine) upon each and every State of the continental United States and the District of Columbia. Such removal and revocation will take effect on 1 April, 1935. (United States Department of Agriculture. Bureau of Entomology and Plant Quarantine. *Notice of Lifting of Quarantine No. 62 - Narcissus Bulb Quarantine*, Washington, 1935, 1 p. [Mimeographed]).

* * The revision of regulation 2 of the black stem rust [*Puccinia graminis*] quarantine, dated 5 February, 1935, and effective on and after 20 February, 1935, exempts from all restrictions the interstate movement of cuttings (without roots) of *Mahonia* when shipped for decorative purposes and not for propagation. (United States Department of Agriculture. Bureau of Entomology and Plant Quarantine. *Modification of Black Stem Rust Quarantine Regulations*, Washington, 1935, 1 p.).

France. — A Ministerial Decree of 21 January, 1935 nominates members of the Commission instituted by the Ministerial Decree of 30 October, 1934, with a view to studying the problems relative to the use of toxic substances for the control of parasites, insects and animals injurious to agriculture [see this *Bulletin*, 1935, No. 2, p. 39]. (Ministère de l'Agriculture. Direction de l'Agriculture. *Bulletin de l'Office de Renseignements Agricoles*, Paris, 15 février 1935, année 1935, n° 4, p. 80).

* * A Ministerial Decree of 15 February, 1935, indicates, *inter alia*, the laboratories selected for analysing samples of copper compounds used as fungicides, taken by the Service for the suppression of frauds. (*Ibid.*, 1^{er} mars 1935, n° 5, p. 107-108).

French Indo-China. — A Decree of 26 December, 1934, establishes the following:—

Art. 1. — The provisions contained in the Decree of 5 April, 1934 are abrogated and replaced by the following:—

Art. 2. — Importation into Indo-China is authorised of the fruits indicated in Article 6 below originating from countries not declared to be infested by the Mediterranean Fruit-fly (*Ceratitis capitata*).

On their arrival in Indo-China these fruits will be subject to compulsory inspection by the Phytopathological Service and a certificate of inspection will be delivered.

If these fruits are accompanied by a phytosanitary certificate of the country of origin they will be exempt from all phytosanitary charges.

In all other cases a tax of one piastre per 100 kilogramme gross weight is payable, fixed by the Addendum of 20 May, 1933 to the Decree of 9 February, 1933.

Art. 3. — The importation into Indo-China of fruits indicated in Article 6 below, is strictly forbidden when they come from the following regions, recognised as being infested by the Mediterranean Fruit-fly:—

Europe: France, Spain, Italy, Sicily, Greece, Madeira, the Azores, Malta, Turkey;

Asia: Syria, Palestine, Cyprus;

Africa: the African continent, the Canary Islands, Cape Verde Islands, Mauritius;

America: Argentine Republic, Brazil, the Bermudas;

Oceania: Australia, New Zealand, Hawaii.

Art. 4. — By repeal of the provisions contained in Article 3, it is authorised, in exceptional cases, to import the fruits indicated in Article 6 below originating in France, Algeria, Tunis, the Union of South Africa, Australia, countries declared infested by the Mediterranean Fruit-fly, but at present exercising phytosanitary control over fruits for export which present sufficient guarantees.

In order to be admitted into Indo-China, fruits from the above mentioned countries should be accompanied by a phytosanitary certificate of the country of origin giving exact details of the fruit exported to Indo-China and bearing the name of the importer.

These fruits will be subject to compulsory inspection on their arrival in Indo-China by the Phytopathological Service and a certificate of inspection will be delivered.

Fruits admitted under these conditions are subject to a tax of one piastre per 100 kilogrammes gross weight, fixed by the Addendum of 20 May, 1933 to the Decree of 9 February, 1933.

Art. 5. — All consignments conforming to the provisions contained in the preceding Articles, whatever may be their origin, will be refused if the sanitary condition is in doubt and will be burnt if the sanitary condition is bad, in conformity with the Decree of 3 October, 1932.

All consignments originating from countries infested by the Mediterranean Fruit-fly and not conforming to the provisions contained in Article 4 will be considered as doubtful and refused.

Art. 6. — List of fruits subject to phytosanitary control: — *Aceras sapota* (sapodilla), *Anona muricata* (custard apple), *Artocarpus incisa* (bread fruit), *Averrhoa carambola* (carambola), *Carica papaya* (papaw), *C. quercifolia* (dwarf papaw), *Citrus bigaradia* (bitter orange), *C. indica* (citron), *C. limonium* (lemon), *C. nobilis* (mandarin orange and its hybrids), *C. japonica* (Chinese orange), *C. sinensis* (sweet orange), *C. decumana* (grapefruit), *Diospyros decandra* (persimmon), *Eriobotrya japonica* (loquat), *Fortunella japonica* (kumquat), *Garcinia mangostana* (mangosteen), *Litchi chinensis* (litchi), *Mangifera indica* (mango), *Persca gratissima* (avocado pear), *Psidium guajava* (guava), *Prunus armeniaca* (apricot), *P. persica* (peach), *P. persica* var. *nectarina* [*nucipersica*] (nectarine), *P. communis* (plum), *Punica granatum* (pomegranate), *Pyrus communis* (pear), *P. malus* (apple).

Art. 7. — The present Decree, which applies to all Indo-China, is applicable to the ports of Saigon and Haiphong. (*Journal Officiel de l'Indochine française*, Hanoi, 19 janvier 1935, XLVII^e année, n° 6, p. 262).

Italy. — The Ministry of Agriculture and Forests has published a list of communes declared infested by grape phylloxera [*Phylloxera vastatrix*] or suspected of being infested up to 31 December, 1934. (*Bollettino Ufficiale del Ministero dell'Agricoltura e delle Foreste*, Roma, 21 gennaio 1935, anno VII, n. 3, pp. 281-306).

*** In order to prevent the poisoning of bees, the Prefect of the province of Ravenna by Decree dated 16 January, 1935 has prohibited the spraying of fruit trees with arsenicals, during the period of blossoming and particularly from the time when the flowers open until the petals fall. (*La Romagna Agricola e Zootecnica*, Ravenna, marzo 1935, anno XXIX, n. 3, p. 75).

*** By Ministerial Decree of 18 January 1935, wheat has been added to the list of merchandise the importation of which is forbidden. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 28 gennaio 1934, anno 76^o, n. 23, p. 418).

*** By Ministerial Decree of 23 January, 1935, according to the Royal Decree-Law No. 1754 of 12 August, 1927 containing provisions for the development of olive growing, and the Law No. 987 of 18 June, 1931 containing measures for the protection of cultivated plants and agricultural products against adverse causes also for the organisation of services relative thereto [see this *Bulletin*, 1931, No. 9, p. 166], a compulsory syndicate has been formed for the improvement and development of olive-growing in the province of Teramo.

The contribution payable by each member of the syndicate cannot exceed 10 centesimi of lira per olive tree in bearing. (*Bollettino Ufficiale del Ministero dell'Agricoltura e delle Foreste*, Roma, 11 febbraio 1935, anno VII, n. 5, pp. 654-655).

*** By four Ministerial Decrees of 7 February, 1935 and in accordance with Article 17 of Law No. 987 of 18 June, 1931, a compulsory syndicate has been established for improving and developing the cultivation of citrus plants in the provinces of Syracuse, Messina, Palermo and Catania respectively.

The annual contribution payable by each member of the syndicate cannot exceed 10 centesimi of lira per citrus plant in bearing. (*Ibid.*, 21 febbraio 1935, n. 6, pp. 882-884, 886-889).

*** By Ministerial Decree of the same date and in accordance with the Royal Decree-Law No. 1754 of 12 August, 1927, also the Law No. 987 of 18 June, 1931, a compulsory syndicate has been established for improving and developing olive growing in the province of Terni.

The contribution payable by each member of the syndicate cannot exceed 10 centesimi per olive tree in bearing. (*Ibid.*, pp. 884-886).

*** By Ministerial Decree of 8 February, 1935, the commune of S. Giovanni d'Asso in the province of Siena is declared infested with grape phylloxera [*Phylloxera vastatrix*]. (*Ibid.*, pp. 889-890).

*** By Ministerial Decree of 12 February, 1935, the control of the Oriental Peach Moth (*Cydia* [*Laspeyresia*] *molesta*) is made compulsory in the provinces of Bologna, Ferrara, Verona, Padua, Treviso, and Venice; this control should be effected chiefly by collecting the infested shoots, the stumps left after topping and the fruits and also by other methods which will be indicated by the 'RR. Osservatori fitopatologici'. The work of control will be carried out by, and at the expense of the holders of lands infested by the insect. (*Ibid.*, 10 marzo 1935, n. 7, pp. 1093-1094).

*** According to the Royal Decree-Law No. 1754 of 12 August, 1927, also the Law No. 987 of 18 June, 1931, a compulsory Syndicate has been established by Ministerial Decree of 2 March, 1935, for the improvement and development of olive growing in the province of Messina.

The contribution payable by members of the Syndicate cannot exceed 10 centesimi of lira per tree in bearing. (*Ibid.*, 21 marzo 1935, n. 9, pp. 1331-1332).

Morocco (French Zone). — By Decree of 22 January, 1935, owners or tenants of lands situated in the territory of the bureau of native affairs of Ahermoumou, region of Taza, are authorised to destroy wild boars on their lands at all times and by all means, except by fire. (Empire Chérifien. Protectorat de la République Française au Maroc. *Bulletin Officiel*, Rabat, 1^{er} février 1934, XXIV^e année, n° 1162, p. 101).

*** By Decree of 19 February, 1935, owners or tenants of land situated in the territory of the annex of civil control of Oulmès district of Meknès, are authorised to destroy wild boars on their lands at all times and in all ways except by fire. (*Ibid.*, 1^{er} mars 1935, n° 1166, p. 238).

*** By Decree of 27 February, 1935, owners or tenants of land situated in the territory of the circumscription of civil control of Taza-banlieue are authorised to destroy wild boars on their land at all times and by all means except by fire. (*Ibid.*, 8 mars 1935, n° 1167, p. 262).

Sweden. — By Royal Notification No. 503 of 12 October, 1934, the Plant Protection Service has been charged with the phytosanitary inspection of consignments of potatoes intended for export.

Whoever would export potatoes should apply in writing for phytosanitary inspection at least five days before the proposed day of export.

The application should give the names of the producer, exporter and importer, the date and place of export, the size of the consignment and the nature of the packing material.

The Plant Protection Service will deliver a phytosanitary certificate if: (a) the inspection shows that the potatoes are free from wart disease (*Synchytrium endobioticum*), Colorado beetle (*Leptinotarsa decemlineata*) and potato tuber moth (*Phthorimaea operculella*); (b) the potatoes as a whole attacked by blight (*Phytophthora infestans*), dry rot (*Fusarium*), common and powdery scab (*Actinomyces* and *Spongospora subterranea*), bacterial diseases (wet rot) and other diseases do not exceed 4%; (c) the potatoes are not damaged by frost; (d) the packing corresponds to the exigencies of the country of destination; and (e) the exporter declares that the potatoes come from a locality exempt from wart disease, Colorado beetle, potato tuber moth or eelworm (*Heterodera schachtii*).

The exporter should put the necessary labour at the disposal of the inspector and furnish him with all information that he may require. The exporter should also revise and keep up to date a list of producers of potatoes for export and should ascertain that each package of potatoes bears the mark of the producer.

The charges of inspection are born by the exporter. (*Deutsches Handels-Archiv*, Berlin, 15. Dezember 1934, 88. Jahrg., 2. Dezemberheft, S. 4291-4292).

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 [Injurious to rice].

NOTES

Entomological Society of Belgium. — This Society, whose head-quarters is in Brussels, has decided to establish a Section of Applied Entomology, which among other objects, proposes to discuss and make known each month the situation in Belgium and the Belgian Congo from the entomological point of view and to discuss, from the same view point, the legislative measures with regard to the national and international circulation of plants.

INTERNATIONAL BULLETIN OF PLANT PROTECTION

DISCOVERIES AND CURRENT EVENTS *

Argentine Republic: Species of *Fusarium* existing in the Country (1).

Mr. César Carrera, Agronomy Engineer, Chief of the Phytopathological Division, Ministry of Agriculture, has made a study of the fungi belonging to the genus *Fusarium* in the Argentine Republic.

This work is the first carried out in the country with a view to making known the saprophytic or parasitic species existing in the country.

The following is a list of the species studied and their hosts:—

- Fusarium equiseti* (Cda.) Sacc. on peas.
- F. scirpi* Lamb. and Fautr. var. *caudatum* Wr. on pepper.
- F. heterosporum* Nees on *Spartina*.
- F. heterosporum* Nees var. *lolii* (W. G. Sm.) Wr. on *Spartina*.
- F. culmorum* (W. G. Sm.) Sacc. on peas.
- F. culmorum* (W. G. Sm.) Sacc. var. *cereale* (Cke.) Wr. on barley.
- F. graminearum* Schw. on wheat.
- F. moniliiforme* Sheld. on maize.
- F. poae* (Peck) Wr. on wheat.
- F. lini* Bolley on flax.

Eritrea: Locusts (2).

During the months of March and April, 1935, no locusts have been reported in the Colony.

Madagascar: Phytopathological Notes (3).

COFFEE.

Hemileia vastatrix, Berk. and Br. — Propaganda for measures against *H. vastatrix*, a very noxious parasite of Arabian coffee, is actively pursued in Itasy (see this *Bulletin*, 1934, No. 8, p. 175). About a hundred thousand trees will

* Under this and the third heading the countries are arranged in French alphabetical order.

(1) Communication from the official correspondent of the Institute, Mr. JUAN B. MARCHIONATTO, Agronomy Engineer, Director of Sanidad Vegetal, Ministry of Agriculture, Buenos Aires, Argentine Republic.

(2) Communication from the official correspondent of the Institute, Dr. Rolando GUIDOTTI, Chief of the Agricultural Bureau of Eritrea, transmitted by the Government of the Colony.

(3) Communication from the official correspondent of the Institute, Mr. G. BOURIQUET, Director of the Phytopathological Laboratory, Pasteur Institute, Tananarive, Madagascar.

be sprayed with copper sulphate free of charge by the local administration for demonstration purposes. New tests which permit the most suitable time for spraying in the various regions to be ascertained have been undertaken on the mountain of Ambre, region of Diego, in Ankaizina, region of Majunga, and in the neighbourhood of Faratsiho, region of Tananarive.

This indispensable intervention for an efficient control of *H. vastatrix*, is, however, practically non-existent for a noxious pest of coffee, *Galcaus involutus*, Drake.

On the request of European and native planters, the Phytopathological Laboratory has sought for a mixture, easily prepared and inexpensive, for the simultaneous control of the fungus and the insect.

G. involutus, like *H. vastatrix*, propagates during the rainy season and covers the entire lower surface of the leaves on which are found insects of all ages during practically the whole of the rainy season.

In practice, a simultaneous control of the two organisms appears to be reasonable.

As Itasy is a tobacco producing region (the harvest will approach 1000 tons this year) researches have been directed towards a copper-nicotine mixture. A mixture tested in the Laboratory has given satisfaction from the points of view of homogeneousness, adherence and insecticide power. Experiments made on the crops in February were very encouraging. According to these first tests the action of the mixture on *Hemileia* does not appear to diminish. The formula is as follows :—

Chopped tobacco leaves	5 kg.
Copper sulphate	1,500 kg.
Lime	(quantity necessary to obtain a slight basicity).
Casein	50 g.
Water	100 litres.

The preparation should be made as follows:—

- (1) In 75 litres of water place 750 g. of sifted lime of the country. Add 5 kg of tobacco leaves (defective and unsaleable leaves) cut into small pieces. Leave to soak for 24 hours.
- (2) Dissolve 1,500 kg. of copper sulphate in 10 litres of water.
- (3) Add the tobacco juice to the solution of copper sulphate after having pressed out the water contained in the leaves.
- (4) Induce basicity of the copper solution by the addition of milk of lime (use litmus paper).
- (5) Bring up to 100 litres.
- (6) Add 50 g. of casein.

Sooty mould. — A fungus showing the characters of a sooty mould has been observed on the lower surface of leaves on the East coast.

Cercospora coffeicola, Berk. and Cke. — A heavy fall of leaves was reported in December, 1934, in the Vatomandry district. On samples of leaves originating from this district, we have found a *Leptosphaeria* in association with, it appears, *C. coffeicola*, Berk. and Cooke, common in this district.

CLOVE TREE.

Cephaleuros virescens, Kunze. — This alga, very common in Madagascar, is often found on clove tree leaves.

Strigula. — In association with a fungus, *Cephaleuros virescens* forms a lichen developing on the leaves and belonging to the genus *Strigula*.

Scale insects, *Aschersonia* and sooty mould. — Scale insect of the Lecaninae family are sometimes found on the leaves of clove trees. These scale insects may be attacked by an *Aschersonia*. They also cause the development of a sooty mould.

Sphaerella. — On the leaves of clove trees have also been observed spots caused by a *Sphaerella* which will be described in a note on the diseases of this plant.

ALBIZZIA STIPULATA.

Gummosis (?). — A serious disease found on the bark and the external parts or wood of *Albizzia stipulata* causes the loss of many trees in the plantations on the East coast. The parts attacked form a gum which flows outwards. The cause of this disease, which appears to be of a physiological nature, has not yet been established.

COCO-NUT.

Scale insects, *Aschersonia* and sooty mould. — Coco-nuts on the East coast are frequently covered with a sooty mould developing on the honey-dew of scale insects. In its turn, the insect may be attacked by an *Aschersonia*.

GRAPE VINE.

Cyphella. — On the High Tablelands, at Miarinarivo, the branches of grape vines have been observed to be altered by a parasite belonging to the genus *Cyphella*.

MAIZE.

Helminthosporium turcicum, Pass. — In different parts of the island intense attacks by *H. turcicum*, Pass. have been reported which was recognised for the first time in Madagascar at the beginning of 1934. This parasite is chiefly harmful to certain varieties of maize, notably 'Plata' and also plants which sprout late.

RICE.

Ustilaginoidea oryzae (Pat.) Bref. — A fungus identical to *U. oryzae* (Pat.) Bref. has been found on samples of rice from the Fénérive, district. Up to the present time this species has not been reported in the colony.

Cercospora. — A *Cercospora*, parasite of rice leaves, has been found in the neighbourhood of Faratsiho.

WHEAT.

Rust. — In spite of a serious attack by *Puccinia triticina*, Erikss., one of the agents of wheat rust in Madagascar, the Agricultural Station of Nanisana has been able to obtain, on small isolated patches, a satisfactory harvest with the variety 'Kenya Standard', introduced in 1933 because of its resistance to these diseases.

TOBACCO.

In the Miandrivazo district, where tobacco is extensively grown, all the parasites and diseases have been found which exist on the High Tablelands where the climate is rather different: odium, *Alternaria tabacina* (Ell. and Ev.) Hori, mosaic, kroepoek, crinkling, and a vermicular disease. In addition to these diseases there exist cases of virescence, streak, a *Cladosporium* disease, a bacterial disease, cases of chlorosis attributable to the lack of nitrogen in the soil. Generally speaking, these diseases are not wide-spread in the West and they do not cause much damage at the present time.

TOMATO AND EGGPLANT.

Heterodera radicolica, Greeff. — On the East coast the roots of these two plants show knots containing eelworms identical, it appears with *H. radicolica*, Greeff.

FRENCH BEANS.

In the neighbourhood of Fénériver, damage has been caused to French beans (*Phaseolus vulgaris*, L.) by a *Sclerotium* which does not differ from *Scl. rolfsii*, Sacc.

Mozambique: Locust Movements (*Nomadacris septemfasciata* and *Locusta migratoria migratorioides*) (1).

November and December, 1934.

In the months of November and December, 1934, the movements of swarms of red locusts (*Nomadacris septemfasciata*) was intensified. At the same time swarms from the high lands flew towards the plain and banks of rivers, chiefly

(1) Communication from Mr. JULIO GARDÉ ALFARO CARDOSO, Chief of the Entomological Section, Lourenço Marques, transmitted to the Institute by the Director of Agricultural Services of the Colony.

towards the coastal zones for laying purposes; for this reason many swarms descended the river valleys coming from neighbouring colonies. Various swarms came from Tanganyika, Nyasaland, Northern Rhodesia, Southern Rhodesia, the Transvaal and Zululand thereby increasing the number of swarms of the previous generation already existing in the colony.

Certain swarms followed the valley of the Chire towards Nyasaland.

These invasions are the result of a natural phenomenon which human ingenuity was so far been unable to control and in the same way it is difficult to prevent the movements of future swarms derived from hopper bands which it has not been able to destroy in spite of the active control exercised.

During the month of November the swarms, generally very large, made great flights though in December a great dispersion was noticed, movements in general following no particular direction.

Layings have taken place throughout the whole colony and the first hoppers have appeared. The first band was reported on 28 November in the Quelimane district.

Locust movements in general have been less intense than in the past year though in certain districts a great number has been reported. Thus, in the region of Manhiça, district of Lourenço Marques, a very large invasion has been reported.

The number of egg deposits, though large, have been less than in the past.

Several tons of egg pods have been collected though less than in the previous season, owing to the fact that the rains prevented breeding grounds being reported.

The damage caused to agricultural property was, generally speaking, much less, though it must not be forgotten that many cultivators have reduced the area under cultivation.

In Fingoe the tropical migratory locust (*Locusta migratoria migratorioides*) was observed in association with *N. septemfasciata*.

January, 1935.

Swarms still flying, chiefly in the districts of Cape Delgado and Nyassa, generally from North to South though in far less numbers. In all the circumscriptions hoppers have been reported though it has been ascertained that their number is less than in the previous season and that the plague is diminishing.

Control of the hoppers has been initiated in all the circumscriptions with satisfactory results.

Information is lacking on *L. migratoria migratorioides* though it is very probable that it exists in the region of Maravia.

February, 1935.

The situation in general has greatly improved in comparison with the last season. The number of hopper bands were much less and much smaller.

It is true, however, that in certain regions such as Manhiça and Valle de Infulene, district of Lourenço Marques hoppers have appeared in great quantities while on the other hand in other regions their appearance has been rare.

Thousands of bands will be destroyed though in many places control will be impossible owing to the fact that these are uninhabited regions and also that water and native labour is lacking.

Southern Rhodesia: Locust Invasion, 1932-1935 (I).

Monthly Report No. 27. February, 1935.

The Red Locust (*Nomadacris septemfasciata*) has been reported in all stages in the colony during February, namely eggs, hoppers and adults, and some late egg-laying has occurred. A sample of adult locusts from the Lomagundi district (Miami) included the Tropical Migratory species (*Locusta migratoria migratorioides*).

The distribution of Red Locust hoppers has included most of the colony, but the hatchings in many districts have been very light and have been comparatively or very easily destroyed.

The largest and most persistent outbreaks have been sustained in the low veld and drier districts including Nyamandhlovu, Wankie, Sebungwe, Lomagundi (Zambesi Valley), Mtoko (low veld), Inyanga (low veld), and Belingwe.

Enemies and Disease.

The main reason for lack of persistence of outbreaks in the higher and more humid parts of the colony was the heavy mortality produced by *Empusa*. The fungus also affected hoppers in the drier areas but apparently not to the same extent, and after the sudden failure of the rains about the end of the first week of the month, the disease seems to have been much less in evidence. The remaining hoppers have shewn every indication of reaching maturity.

The Black or White-bellied Stork (*Abdimia abdimii*) has been present in the colony in great numbers and the White Stork (*Ciconia alba*) has been reported from various localities. Parasites, apart from *Stomatorrhina* attacking eggs, have not been reported or discovered.

Poisoning of Locust Eating Birds.

Certain experiments have been carried out in collaboration with the Division of Chemistry to test the danger to birds from eating locust hoppers sprayed

(1) Communication from the official correspondent of the Institute, Mr. RUPERT W. JACK, F. E. S., Chief Entomologist, Department of Agriculture, Salisbury, Southern Rhodesia.

with locust poison. A detailed report will be published later, but it may be stated here that the results obtained indicate that no such danger exists, even if the poison is used at excessive strength.

Outlook.

The outlook as far as the Red Locust is concerned continues apparently favourable, but the failure of the rains will probably admit of more hoppers maturing than would have been the case if the very humid conditions of December and January had continued. The dry weather is also probably favourable to the development of the Brown Locust (*Locustana pardalina*) in Bechuanaland although the position there is not very clear from available reports.

Monthly Report No. 28. March, 1935.

The only species of locust reported in the colony during March has been the Red Locust (*Nomadacris septemfasciata*, Serv.). The reports refer mainly to the hopper stage and only a few districts have been involved. The invasion is at the present time at a low ebb.

Eggs were reported to have been laid in the Urungwe section of the Lomagundi district, by a swarm of fliers which crossed the Kariba Gorge from N. Rhodesia at the beginning of the month, and did considerable damage to native crops. Fliers were also reported in the Sebungwe district at the same time, and there also laid eggs and did some damage to native crops. On the 18th a swarm of fliers also appeared in the Bubi district, but no report of egg-laying was received.

All these swarms were certainly invaders from the north or north-west, and it is difficult to account for swarms of this species in egg-laying condition at this time of year, long after the first invaders had laid eggs and perished.

Up to the end of the month no locusts are known to have matured within the colony.

Operations have been prosecuted vigorously against hoppers in all accessible positions, and, from available information, it would appear unlikely that any considerable number of flying swarms will develop in the colony, although a small number are likely to appear from the remoted localities.

No records of *Empusa* or parasites were secured during the month.

It is noteworthy that the main incidence of breeding during the present season appears to have occurred in the lower veld of the northern part of the colony, extending from Wankie district through Sebungwe, Lomagundi, Darwin and Mtoko to Inyanga. Nyamandhlovu and Belingwe districts sustained fairly severe attacks in certain parts. Elsewhere hatchings were light and scattered and some districts escaped almost entirely.

VARIOUS QUESTIONS

Vth Assembly of the International Institute of Beet Research.

The Vth Assembly of the International Institute of Beet Research, which met in Brussels in January, 1935, decided, *inter alia*, to charge the Belgian Institute for Beet Improvement, in collaboration with the Netherlands' Institute for Beet Cultivation, with the duty of discovering the best methods of control of different types of yellowing of beets. The Assembly also recommended that new researches should be made to determine the most suitable means of control of the leaf spot of beet (*Cercospora beticola*).

Fourth Meeting of the Committee for the Study of Locust Biology.

At this meeting, held at Algiers from 18 to 25 March, 1935, after having determined the results obtained in fixing the limits of the outbreak areas of the tropical migratory locust (*Locusta migratoria migratorioides*), the Committee decided to give special attention at present to the desert locust (*Schistocerca gregaria*).

The Committee also decided to give its support to the establishment of a central laboratory dependant from the Chair of Entomology of the National Natural History Museum at Paris.

LEGISLATIVE AND ADMINISTRATIVE MEASURES

Germany. — By Decree of 27 March, 1935, concerning the application of the Law on hunting of 13 July, 1934, it is forbidden to lay poison outside houses and enclosed lands. All substances having a deadly effect on game are considered as poisonous. This regulation does not apply to the control of slugs, insects and worms, nor to that carried out by means of aeroplanes. It is also permitted to use poisoned seeds dyed red and preparations with a phosphorous basis in the control of mice and rats; these preparations may be use for the control of crows and magpies. Precautions to be taken are fixed for this control. The control of crows and magpies, may be made compulsory in certain districts.

Rabbits are considered as game; it is however, permitted to hunt them all the year round.

The part of this Decree refering to the damage caused by game escaping from warrens fixes the following measurements which will be considered sufficiently high for enclosures:— for red deer and fallow deer, wire netting 1.50 m. high; for hares and rabbits, netting 1.50 m. high, 1.30 m. being below the soil and 20 cm. above. In this last case the mesh should not exceed 40 mm. (*Amtliche Pflanzenschutzbestimmungen*, Berlin, 1. Mai 1935, Bd. VII, Nr. 5, S. 46-59).

Germany (Hamburg). — By amendment, dated 26 February, 1935, to the Police Ordinance of 15 March, 1930 concerning the control of wart disease of potatoes [*Synchytrium endobioticum*] [see this *Bulletin*, 1930, No. 10, pp. 150-151], it is forbidden to plant potatoes in the workmens and householder's gardens with the exception of the varieties 'Juli' ('Juli-Niere', 'Juli-Perle') and 'Preussen' obtained from a breeder or officially recognised as being potatoes for planting. (*Amtliche Pflanzenschutzbestimmungen*, Berlin, 1. April 1935, Bd. VII, Nr. 4, S. 36).

Germany (Saxony). — By Decree of 15 February, 1935, relative to the control of fruit diseases and pests, it is prescribed that fruit trees should be cut which are dead or in bad condition and are attacked by woolly aphis [*Eriosoma lanigerum*] or canker [*Nectria ditissima*] or any other disease or pest to the degree that such treatment appears to be advisable.

Witches' broom of cherry trees [*Taphrina cerasi*] should also be removed and all branches which are dead, in bad condition or attacked by Scolytids.

Mosses, lichens, and old bark should be removed from the trees. Tents of caterpillars and mummified fruits found on the trees in winter should be removed and burnt.

Fruit trees, which are too old and on account of their height do not permit, or only permit with difficulty the execution of the work mentioned above, should be cut down if it is impossible to prune them in a suitable manner.

All this work should be carried out before 15 March of each year.

The Police authorities, in accord with the experts or the local fruit growing associations, will appoint persons or committees of experts to see that these prescriptions are applied.

If persons concerned do not carry out the necessary work within the required time, the Police may appoint other persons to execute the work at the expense of those interested. (*Amtliche Pflanzenschutzbestimmungen*, Berlin, 1. April 1935, Bd. VII, Nr. 4, S. 37).

Germany (Thuringia). — By Decree of 18 March, 1935, measures have been adopted for protecting newly sown fields against pigeons. These measures correspond to those adopted in Prussia [see this *Bulletin*, 1935, No. 4, p. 86]. It is, however, added that these measures may be extended to the harvesting period of oleaginous and leguminous plants and cereals.

These measures do not apply to carrier pigeons. (*Amtliche Pflanzenschutzbestimmungen*, Berlin, 1. Mai 1935, Bd. VII, Nr. 5, S. 64).

Argentine Republic. — By Ministerial Resolution No. 708 dated 9 October, 1934, the 'Dirección de Defensa Agrícola y Sanidad Vegetal' is charged with the execution of the Decrees relative to the exportation of fresh fruits. (*Boletín Oficial de la República Argentina*, Buenos Aires, 4 de febrero de 1935, año XLIII, núm. 12.193, págs. 89 y 90).

* * By Decree No. 50.624, dated 26 October, 1934, the 'Comisión Nacional de Defensa contra la Langosta' is authorised to spend up to the sums

of 130.000 and 750.000 'pesos', national currency, respectively on the purchase of adults and eggs of locusts [*Schistocerca paranensis*]. (*Ibid.*, 6 de febrero de 1935, núm. 12.195, pág. 168).

**. The Decree No. 51.664 of 15 November, 1934 modifies the Decree No. 50.624 of October of the same year in the sense that the sum to be spent on the acquisition of eggs of the South American locust [*Schist. paranensis*] amounts to 400 000 'pesos', national currency, up to 31 December, 1934. (*Ibid.*, 27 febrero de 1935, núm. 12.213, pág. 918).

**. The Resolution No. 805 of 19 November, 1934 regulates the Decree No. 51.325 of 9 November relative to the sale of products intended for the control of plant pests. (*Ibid.*, 21 de marzo de 1935, núm. 12.229, págs. 734 y 735).

**. By Decree No. 51.966 of 21 November, 1934 it is forbidden, as from 16 March 1935, to send fresh fruits — with the exception of bananas, oranges and other citrus fruits, pineapples, strawberries, grapes, pomegranates, figs, melons and water-melons — to the southern zone of the province of Buenos Aires and the Territories of Río Negro and Neuquén in order to avoid the introduction of the Oriental Peach Moth (*Laspeyresia molesta*) which exists in other parts of the country. (*Ibid.*, 16 de marzo de 1935, núm. 12.226, pág. 578).

Ceylon. — By Notification of 29 November, 1934, citrus fruits originating from Palestine should be previously treated with hydrocyanic acid in order to destroy scale insects. Consignments should be accompanied by a certificate issued by a official duly authorised by the Department of Agriculture of Palestine, stating that this treatment has been carried out. (*Deutsches Handels-Archiv*, Berlin 1935, 89. Jahrg., 2. Aprilheft, S. 1302).

French Colonies. — By Decree of the Minister for Colonies, dated 8 February, 1935, article 6 of the Ministerial Decree of 22 February, 1926 regulating the introduction of cotton seed into the French Colonies [see this *Bulletin*, 1935, No. 2, p. 36], has been modified thus:—

'The provisions of the present Ministerial Decree are applicable to the products enumerated in article 1 and intended for importation or transit through all the French Colonies except Madagascar, New Caledonia, French Equatorial Africa, Indo China (Cambodia and Cochin-China only) and the New Hebrides'.

'The prohibitions contained in article 1 of the present Ministerial Decree are applicable to the products stated coming from Egypt, the Anglo-Egyptian Sudan, Italian Somaliland, former German East Africa, British East Africa, Nigeria, Sierra Leone, Angola, Lagos, the Belgian Congo, Algeria, Tunis, Morocco, Zanzibar, Asia (except Indo-China, Tonking, and Annam), Brazil, Mexico, Hawaii, Samoan Islands, Australia, the British West Indies, Texas, Louisiana, New Mexico (United States), and Greece'. (*Journal Officiel de la République Française*, Paris, 24 février 1935, LXVII^e année, n^o 47, p. 2366).

* * By Decree of the Minister for Colonies, dated 9 February, 1935, the Ministerial Decree of 7 December, 1926 [see this *Bulletin*, 1927, No. 2, pp. 23-24] concerning the protection of the banana against Panama disease [*Fusarium cu-bense*] has been modified thus:—

' Art. 1. — Paragraph 2 of article 6 of the Ministerial Decree of 7 December, 1926 is modified and completed as follows:—

ARTICLE 6.

.....
' The prohibitions contained in article 1 of the present Ministerial Decree are applicable to the products stated coming from the American continent, the West Indies, the Canary Islands, Sierra Leone, the Gold Coast, Martinique, Guadeloupe, and French Guiana '.

' Art. 2. — With a view to preventing the extension of Panama disease in Martinique, Guadeloupe, and French Guiana, these three Colonies remain subject to the prohibitions contained in article 1 of the Ministerial Decree of 7 December, 1926 '. (*Ibid.*).

Belgian Congo. — The Decree No. 33/Agri., dated 29 December, 1934, concerning the control of locusts in the Province of Stanleyville, prescribes for this purpose the same measures as have already been adopted for the Province of Lusambo [see this *Bulletin*, 1935, No. 2, pp. 36-37]. (*Bulletin Administratif du Congo Belge*, Léopoldville-Kalina, 10 février 1935, 24^{me} année, n° 3, p. 72-73).

Denmark. — By amendment, dated 18 December, 1914, to the provisions concerning the regulation of means of control of crop pests, it is established that, as from the 1st January, 1935, the allowance permitted for nicotine preparations may vary between — 1 and + 5 % of the guaranteed content in pure nicotine, so that for a preparation which should contain 80 % nicotine, the actual content would vary between 79.2 and 84 %. (*Deutsches Handels-Archiv*, Berlin 1935, 89. Jahrg., 2. Februarheft, S. 386).

Danzig (Free City of). — Following the Phytosanitary Convention between Danzig and Poland [see this *Bulletin*, 1935, No. 2, p. 37] establishing that the Free City should apply in its territory all the prescriptions concerning the protection of plants in force in Poland, the Government of Danzig has, by various Decrees dated 11 December, 1934, adapted the phytosanitary legislation of the country to the regulations in force in Poland.

One of these Decrees on the control of plant diseases and pests, and weeds corresponds to the analogous Polish Decree of 19 November, 1927. Another is concerning the importation of plants; the phytosanitary provisions contained therein also correspond with Polish regulations. Potatoes may be imported without special permission. The model of the certificate used for exporting potatoes and plants to Poland may also be used for exporting to Danzig, substituting the word ' Danzig ' for ' Poland '.

The Decree of 15 May, 1933, on the control of wart disease of potatoes (*Synchytrium endobioticum*) and the Colorado beetle (*Doryphora* [*Leptinotarsa*] *decemlineata*) [see this *Bulletin*, 1933, No. 11, p. 252] is replaced by regulations corresponding to the Polish Decree of 3 August, 1932.

A Decree on the destruction of thistles contains a regulation for destroying all thistles (*Cirsium arvense*, *C. lanceolatum*, *C. canum*, *C. rivulare*, *Carduus nutans*, *C. crispus*, *C. acanthoides*) by pulling them up either by hand or by means of implements before the period of flowering.

A Decree on the control of the woolly aphid of apple [*Eriosoma lanigerum*] came into force on 22 December, 1934.

Finally, a Decree concerning the destruction of barberry bushes (*Berberis vulgaris*) replacing the Police Ordinance of 31 July, 1925, prescribes the destruction of all plants of barberry, with the exception of plants growing in botanical gardens or at a distance of at least 200 m. within the forest borders. (*Amthliche Pflanzenschutzbestimmungen*, Berlin, 1. Februar 1935, Bd. VII, Nr. 2, S. 19-20).

United States of America. — Notice of Quarantine No. 71, with rules and regulations supplemental thereto, approved on 20 February, 1935 and effective on 25 of the same month, quarantine the States of Connecticut, New Jersey, and New York to prevent the spread of the Dutch elm disease (*Ceratostomella ulmi*), which is known to exist in parts (designated as regulated areas) of these three States.

It is forbidden the interstate movement from the regulated area of any and all parts of all species of the genus *Ulmus*, whether forest or nursery grown, except that elm lumber or products manufactured from or containing elm wood, if entirely free from bark, are exempt from restriction.

No restrictions are placed on the interstate movement wholly within the regulated area.

Shipments originating outside of the regulated area if moving through this area must be billed on through bill of lading. (United States Department of Agriculture. Bureau of Entomology and Plant Quarantine. *Dutch Elm Disease Quarantine (Domestic)*. Notice of Quarantine No. 71, with Regulations, [Washington, 1935], 4 pp. [Mimeographed]).

** According to detailed instructions relative to packing materials for nursery stock, plants, and seeds, dated 27 February, 1935 and effective on 4 March, 1935, all packing materials employed in connection with importations of nursery stock and other plants and seeds under Quarantine No. 37 [see this *Bulletin*, 1935, No. 5, p. 112] are subject to approval as to such use by the Bureau of Entomology and Plant Quarantine.

Such materials as sphagnum, ground peat, coconut fiber, osmunda fiber, buckwheat hulls, cereal straw (except rice straw), cereal chaff (except rice chaff), excelsior, shavings, sawdust, and charcoal, are authorized for use with nursery stock, plants, and seeds generally, provided they are free from sand, soil, or earth and have not been previously used as packing or otherwise with living plants.

Packing materials other than those specifically mentioned may be authorized when it has been determined that their use does not involve a risk of introducing insect pests and plant diseases.

Under the provisions of regulation 7, Quarantine No. 37, the use of sterilized soil and of naturally sterile soil as described below is not authorized for plants or plant products other than bulbs, corms, nuts, and seeds.

The prescribed method of sterilization is as follows:—

The sand, soil, or earth must be brought to a temperature of 100° C. and held at or above that temperature for a period of 1 hour. Any method which will maintain the heat throughout the whole mass at the required temperature for this length of time will be satisfactory to the Bureau. The sterilization must be performed under the supervision of a duly authorized inspector of the country of origin and must be certified to by such inspector.

Under the provision of the said regulation 7 for use as packing with bulbs, corms, seeds, and nuts, of soil which has been otherwise treated the following are authorized:—

(a) Subsoil from Japan, collected and handled under the supervision of the Imperial Plant Quarantine Station at Yokohama, Japan, when certified by the director of that station that the subsoil has been taken from at least 2 feet below the surface, and that it has been sifted, dried, and stored so as to prevent contamination by insects and diseases.

(b) Dune sand from Belgium and the Netherlands, taken from a depth of 5 feet or more below the surface and so certified by an inspector of the phytosanitary service of the country concerned.

(c) Coral sand from Bermuda, uncontaminated by surface soil, and certified as such by the Director of Agriculture of Bermuda. (United States Department of Agriculture. Bureau of Entomology and Plant Quarantine. *Packing Materials for Nursery Stock, Plants, and Seeds*, Washington, D. C., 1935, 2 pp. [Mimeographed]).

France. — By Ministerial Decree dated 1 March, 1935, the zones declared infested by the Colorado beetle [*Leptinotarsa decemlineata*] and the zones of protection are limited as indicated by the table attached to the above mentioned Ministerial Decree. The previous Ministerial Decrees of limitation are annulled. (*Journal Officiel de la République française*, Paris, 21 mars 1935, LXVII^e année, n° 68, p. 3230-3239).

*** The Law of 23 March, 1935 accords approval to the International Convention for Plant Protection signed at Rome on 16 April, 1929 [see this *Bulletin*, 1929, No. 4, pp. 50-55]. (*Ibid.*, 26 mars 1935, n° 72, p. 3428).

Italy. — By Ministerial Decree of 27 November, 1934, the new regulation has been published on the transport of dangerous and harmful merchandise on the State railways. (Supplemento ordinario alla *Gazzetta Ufficiale* n. 82 dell'8 aprile 1935, 64 pp.).

*** By Ministerial Decree of 25 February, 1935, the amount of the contribution has been fixed which is paid by the State to all those concerned in the compulsory control of scale insects of citrus trees. The rules according to which this contribution should be accorded have also been established. (*Bollettino Ufficiale del Ministero dell'Agricoltura e delle Foreste*, Roma, 11 aprile 1935, anno VII, n. 11, pp. 1675-1679).

*** By Ministerial Decree dated 13 March, 1935, the interdiction, of a temporary nature, placed on the hunting of quails on the sea coast, by the Ministerial Decree of 18 December, 1933, is prorogued for the present hunting season. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 21 marzo 1935, anno 76°, n. 67, pp. 1131-1132).

*** By Decree No. 46153 of 29 March, 1935 the Prefect of the province of Cagliari has made it incumbent on all owners, tenants and managers of land to declare, without delay, the hatching of locusts and to destroy them by means of poisoned baits (bran with 4 % sodium arsenite) provided, on application, by the Travelling Chair of Agriculture; and also to report on the localities where laying is taking place.

This Decree is followed by a circular, of the same date, requesting the ' Podestà ' and ' Commissari prefettizi ' of the province to assist in the organisation and execution of the locust control. (*L'Agricoltura Sarda*, Cagliari, aprile 1935, anno XIV, n. 4, pp. 177-180).

Morocco (French Zone). — A Decree of 8 March, 1935 authorises the destruction of rabbits causing great damage in a zone within the circumscription of civil control of the Hayana. (Empire Chérifien. Protectorat de la République française au Maroc. *Bulletin Officiel*, Rabat, 22 mars 1935, XXIV^e année, n° 1169, p. 332).

Mexico. — By ' Acuerdo ' of 21 October, 1934, the following paragraph is added to article 2 of the ' Cuarentena Exterior ' No. 3 against the pink bollworm of cotton [*Platyedra gossypiella*], dated 17 June, 1927:—

' For the importation of bales of cotton from Egypt, a country infested with the pink bollworm of cotton, a certificate is required from the corresponding phytopathological Service of the country of origin stating that the bales were fumigated at the port of export with hydro-cyanic acid at the rate of 60 grammes per cubic metre for two hours in a vacuum of 27 to 25 inches (international standard)'. (*Diario Oficial*, México, 14 de noviembre de 1934, tomo LXXXVII, núm. 12, pág. 289).

Netherlands (The). — The Law of 27 December, 1934, published 5 February, 1935, contains regulations for the control of the Colorado beetle [*Leptinotarsa decemlineata*]. (*Staatsblad van het Koninkrijk der Nederlanden*, 1935, n° 687, blz. 1-3).

Peru. — By 'resolución suprema' No. 141 of 15 December, 1934, *Dysdercus ruficollis* ('arreatado') and *Gasterocercodes gossypii* ('gorgojo de la chupadera') are declared pests of national agriculture. The cultivation of cotton shoots is prohibited in all the valley of the Chira and its affluents. The period for sowing cotton remains limited to the months of January and February. In order to maintain a fallow period — the fields to be completely free from cotton — which should correspond with the months of November and December, planters should destroy all cotton plants and the roots should be extracted and burnt before the end of October. The presence of cotton plants of the variety 'País' is prohibited in the valley of the Chira and its affluents. (*La Vida Agrícola*, Lima, enero de 1935, vol. XII, no. 134, pág. 65).

* * By another 'resolución suprema' of the same date (No. 142) the sowing of cotton in the Santa valley should commence during the first fortnight of May and finish during the last fortnight of July. The shoots should be pruned during the month of August, preferably in the first fortnight of the month. Cultivation of cotton shoots of the second and also successive years in the Santa valley is prohibited. The following weeds are declared pests of national agriculture, being hosts of the 'arreatado' and the 'picudo del algodónero' [*Anthonomus vestitus*] also those which will be periodically reported by the 'Dirección de Agricultura y Ganadería'; it being compulsory for them to be destroyed by planters, industries and transport undertakings, municipalities and the State itself: *Sida paniculata* ('pichana' or 'rabo de zorro'), *Malachra* sp. ('salvia espinuda') and *Malva hortensis* ('amapola'). The cultivation of cotton is forbidden in the undulating zone of Lacramarca or Zaruno, which is irrigated exclusively by the waters of this zone. (*Ibid.*).

* * A third 'resolución' of the same date declares sugar cane in the Lambayeque valley to be infected by mosaic and consequently the extraction and transport of cane cuttings from this valley destined for other parts of the territory of the Republic, free from the disease, is prohibited. (*Ibid.*, pág. 66).

Saint Vincent. — The Regulation made by the Governor in Council on 21 September, 1934 under the authority of section 15 of the Importation of Plant Diseases Prevention Ordinance establishes the form of health certificate for plant imports or exports. (*Saint Vincent. Orders in Council, Rules, Regulations and Proclamations for the Year 1934*, Kingstown, 1935, p. 28).

Yugoslavia. — The Ministerial Notification No. 13308/II of 11 March, 1935, publishes the list of countries which must be considered, for the year 1935, infested by wart disease (*Synchytrium endobioticum*), the Colorado beetle (*Leptinotarsa decemlineata*) and potato moth (*Plutheborimaea operculella*), also by San José scale (*Aspidiotus perniciosus*). (*Službene Novine*, Beograd, 22 mart 1935, godina XVII, broj 69-XVI, str. 312).

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[Contains:—
I. Organización del Servicio Fitopatológico Agrícola.
II. Servicio de Plagas del Campo.
III. Inspección Fitopatológica.
IV. Investigación y experimentación.
In the appendix entitled: 'Legislación fitopatológica', are given several measures not included in the report of 1932 (see this *Bulletin*, 1934, No. 2, p. 45) also the more important measures established in the year 1933].

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NOTES

IVth International Technical and Chemical Congress of Agricultural Industries. — A section of this Congress, which will take place in Brussels from 15 to 28 July, 1935, will be devoted to the diseases and pests of industrial plants.

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